The Builder.

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OUR Indian Empire is at this moment the engrossing subject in all minds. Thousands of our countrymen are knit to its destinies by the presence there of relatives and friends, and wait with trembling and fear the arrival of every mail and message; while hundreds of thousands who are free from such ties quiver with indignation and grief at the recollection of the barbarities committed by the traitorous scoundrels—the inhuman fiends—who have revolted from our sway, and demand, as with one voice, the infliction of a punishment complete and terrible. Never was the heart of England more stirred than it is at this moment, and woe to those in power who disregard its promptings. With these sad events it is not our province to deal; but, bearing upon them, we have advice and a warning to give, which, if attended to, will save life, lessen sorrow, strengthen our arms, and shorten the struggle.

WE ASK FOR THE IMMEDIATE ORGANIZATION OF A SANITARY COMMISSION TO PROCEED TO INDIA WITH OUR ARMY.

We could point to a score of warnings in our pages, attention to which, in the first instance, would have saved wealth and lives: recollect, if no other, the dangers of the camp at Aldershott; the evils which threatened the Golden-square district, in a sanitary point of view; and the indefensible arrangements at Netley hospital, all pointed out by us in time to have prevented the evils before they occurred; and let the Government listen to our warning now, and act with wisdom and promptness. But what good will it do? some may ask.

A Parliamentary report, recently published, as to the deaths in the Baltic and Black Sea fleets, shows that the deaths in both fleets, in the years 1854 and 1855, numbered 2,029, of which 1,574 were the result of disease, 228 of suicide, drowning, and other accidental causes, and only 227 of wounds in action. These figures show that in our navy, as in the army, pestilence and disease are far more fatal than the sword or artillery, and the other perils of war. The deaths by various diseases amounted to upwards of 7 to 1 of those which were caused by battle.

The report states that if the Baltic fleet had not anchored in Baro Sound during the summer of 1854, and if the fleet in the Black Sea had shunned Baljick and Varna in July, August, and September of the same year, the ravages by cholera would have been very much lessened. We also learn that there is no evidence to show that the climate and soil of the steppes of the Crimea had the least effect in producing complaints approximating to cholera; but that accumulated filth and effluvia, arising from the decay of organic matter, brought their sure and deadly results.

In one ship of the Baltic fleet, the number of deaths by cholera amounted to more than half of the whole of the deaths which occurred from this cause in that fleet. It would be useful to know the position of this fatal ship at the time of the attack, the nature of its ventilation, the space, accommodation, &c. allowed to each man, and other sanitary particulars.

In the Crimean armies, the number of those who died from disease was immense in comparison with those who fell in the various conflicts. This is the case in all campaigns. A competent authority has stated that a quarter of the British army engaged in the Indian war will fall by fever, cholera, dysentery, and similar complaints. Two of the chiefs of that army have already perished by these agencies, and hundreds of men. In the Crimea these were more deadly foes than the Russians.

If, then, we find that the pestilence is more terrible than the enemy, it is evidently necessary that we should have commanders and officers as capable of fighting the one as the other. During the long continental war, forty or fifty years ago, the principles of sanitary science were but little understood; and even at the present time, we fear that the sure means of saving life by a proper attention to those laws which prevent many fatal complaints are still too little understood, or even believed in, by the leaders of our fleets and armies. Terrible as are all the horrors of war, there is no phase of it more dreadful to contemplate than the probable death of 250 out of each 1,000 strong men who form our army in India,—not while aiding the actual object in view,—not in the excitement of battle and with the glory of success,—but helplessly and unnecessarily, in camps and hospitals, stricken down by rotting matter,—killed by want of sufficient pure air!—and these not the aged, the delicate, or those of tender years, who form such a large percentage of the ordinary deaths in our population, but men in the prime of years and manhood.

At the present time in the metropolis and large cities the death of 40 persons in the 1,000 per annum is considered, and rightly, a very great excess: it is little short of murder, indeed! In some of the model buildings of London, inhabited by families, the number of deaths in the year is 16 in the 1,000. Out of the sixteen above mentioned, if the average number of infants' deaths be the same as among those belonging to a similar class in the metropolis, we should have nearly half of the deaths under five years. This shows the value of mature lives, and that every care must be taken to save them; especially, says the financier, when we recollect what it costs the country to send each man to India.

Sanitary management must be greatly improved, and ere long become one of the chief arts of warfare. The time is not far distant when an admiral will rather place his ships within the range of over-powerful batteries than in positions which ensure the certainty of pestilence; and that in the choice of places for encampments, the sanitary condition of sites will be held in nearly as much consideration as their military fitness.

The late Sir Charles Napier, when in India, found large bodies of men dying with fearful rapidity of fever and cholera, and on more than one occasion immediately stopped the progress of these diseases by moving the camp to other sites. A similar kind of judgment will be required at the present time: but we fear that certain saving measures have not yet been properly studied and appreciated by the heads of either our army or navy; and, certainly, measures in due proportion to our extended knowledge of the science of preserving health have not yet been adopted.

At a time of great distress, a body of sanitary officers were sent from England to endeavour to stay the plagues which beset the camp before Sebastapol, and much advantage resulted from the step. This of itself, and with the clear evidence which we have at home of the fact, that by knowledge and exertion thousands of valuable lives may be saved, should lead at once to what we are calling for, namely, *the appointment of a distinct and sufficiently powerful body of sanitary officers, and also of workmen to carry out their instructions, to attend the army in India.* We believe that such a corps, properly organized, would, in a region like India, be the means of adding immensely to our available force. It is true that many of our army surgeons are quite capable of giving advice on this subject, but we have reason to know their opinions do not meet with sufficient consideration; and, moreover, the calls upon their attention during a campaign leave them little time for additional duties.

Thousands will die in India unnecessarily, if the course we now urgently point out be not pursued.

ART IN OUR PARKS.

SOME months since—from observation of certain public statues and contradictory evidence of the merits of British sculptors—we were induced to speak of the relationship of the arts, as not recognised practically, and of a required predominance in works of the first class belonging to other "arts" than architecture, of those qualities of beauty which are architectural.* More recently, we have had to pursue the subject in connection with notices of the models for the Wellington monument.† Believing that the restriction of "architecture" to a sense which we may call the technical or professional one, involves results not favourable wholly to progress in the separate arts—we venture to consider the bearing of the inquiry upon a different vehicle of expression,—one which though it may not have held a recognised place with painting or sculpture, is nevertheless to be regarded as art,—and as that in particular, which is of great importance to the public. We refer to what we then designate the *art* of landscape gardening.

The right apprehension of this art is essential to the success of improvements in our parks, in which considerable interest is taken by the present Government,—as to those similarly in our squares and open spaces,—and even, streets. In such improvements there is a vast field as yet almost untouched; and every art, general or particular, which contributes to those objects, is, at the same time, an agent in the sanitary, social, and moral amelioration of the masses who must congregate in towns. For, the influence of such works as we refer to, is not only that acting directly on the bodily and mental constitution of individuals, but comprises that which is transmitted from either seat of impressions to the other. The immediate sanative effect is an object second in importance to none: but the indirect agency has seldom been estimated at its proper importance, as bearing upon the same end. It is not sufficient to provide open spaces; but, these must be such as are beautiful and attractive, like Hampstead-heath, or they must be aided by some resources of art.

The requirement for inhabitants of towns, is somewhat akin to that which is perceived by the commanders of armies in cantonments, or of crews in winter-quarters in the Arctic regions,—the need of some amusing occupation for the mind as a direct means of preserving *health*. It is, of course, now capable of clear demonstration that change of pursuit is necessary to man: relaxation of some sort is essential; and, for the majority of the people, to whom labour is of unvarying character, the choice only lies between what is harmless, or beneficial, and that which is noxious individually and socially. Therefore, the growth of populated districts, without abundant provision for the solace which the mind requires, and can receive through the eye, is to be regarded as of very doubtful benefit in civilization.

The question of providing, by sufficient vegetation within the area of towns, for the chemical change which is part of the process of respiration, has been often discussed in these pages. Be it understood, that whatever the human constitution requires—received through the exercise of one function,—it equally demands through the excitement of the visual and mental sense. The beauty of Nature, no less than the products of Nature, was designed for use; and, for the same end, the power to create the beautiful by

* See p. 213, *ante*,—on "Monuments and Statues."
† See pp. 415, 425, 445, 457, and 489.

art, was conferred on man. By no means should all the sylvan beauty of a district or suburb be destroyed by the progress of building; but the trees should be retained, and patches of green sward where possible; and these would impart that element to the architecture which it now much requires, and without which, or without association of position and contrast with some objects of natural beauty, our art really fails of that which is its true character and full expression. Need we then say again, that merely the ample provision of parks, or other open spaces, requisite as this is, does not comprise all that is needed, but that whilst the beauty of natural objects—trees and shrubs—should be exhibited in our *streets*, the beauty of *art* should be considered in the design and "laying-out" of our parks, and the arrangement of any of our public gardens. Architecture and sculpture, indeed, are never seen to greater advantage than when in immediate conjunction with the works of nature; and whether, as some hold, nature is designedly imperfect, and the operation of mind in man which produces art, has scope left for it; or whether an order of images, with distinct attributes of beauty, is produced by the union of art and nature; certain it is, that we have never seen a combination of architecture with sylvan, maritime, or rocky scenery, where the natural element did not seem to derive a special charm from the presence of the art. The fact of such value from variety and contrast, is deducible from, and is part and parcel of that philosophy of art which is studied in the book of nature itself. It might be predicated from what delights in the landscape, or in natural objects alone, that the fact would be so,—by the opposition of marked regularity and symmetry to what is comparatively irregularity and freedom—of obvious and human art, to art of the most elevated kind—not apparent. For, as some say,—

> "All nature is but art, unknown to thee,
> All *chance* direction, which thou canst not see."

We ought, perhaps, in the opinion of some of our readers, to give the whole of our exertions, just now, to the matter which might be considered of first consequence, namely, provision of the open spaces themselves—more numerous in proportion to the inhabited districts, more general in their distribution, and on a systematic plan of addition, *pari passu*, with the growth of London. This subject is even yet far from exciting the steady attention which its importance merits. Knowing that a vast majority out of the London residents are so circumstanced, that they must remain, day after day, as much walled in from the beauty of nature as if the existing parks had never been provided; feeling that health, alike bodily and mental, requires, as we have shown, not only the sustenance of pure air, but that of change of scene and variety of objects; again, knowing that the difficulty of getting open spaces increases rapidly,—whilst large tracts of ground, unfit to be built upon, become crowded with habitations,—we marvel at efforts which, as shown in a recent article,* are so disproportionate to the requirements, and at the positive opposition which has to be encountered. Before it has been settled whether the country, or the metropolis, or particular districts should provide parks, the chance of gaining ground at all, will have gone by; and ultimately, resentment against whatever power or authority is popularly known—of course the Government—will be loudly expressed.

Cobbett was accustomed to say that London drew to itself the strength of the country, or prospered by impoverishing the provinces; but, it should be recollected on the other hand, that the metropolis, or, in fact, its inhabitants, benefit the nation; and these suffer even grievously, from their choice of residence, in so doing. It can be necessary only to make allusion here to the multifarious influences of the condition of dwellings—a condition far worse than what exists in provincial towns, and due, in great measure, to the cost of ground, or, to the working man, the difficulties or expense of conveyance between the centre and the suburbs. Consider also, how large and increasing a portion of the people—beyond the two millions and a half of Londoners—spend, for business or pleasure, some part of the year in town, and perhaps feel a proper pride in what conduces to the adornment or the prosperity of the capital. Recollect the positive inconvenience which is entailed on London residents, by the influx of strangers on all occasions of public interest. Be it an exhibition of 1851, a hero's funeral, a peace commemoration, or an emperor's visit; a queen's birthday, a drawing-room, or an Epsom or Ascot race-meeting; the country pours into the town a new "tide of human existence,"—its thousands, often noisy, mischievous, or unwashed, to fill the best seats at places of resort, to take your accustomed corner where you are wont to dine, to crowd the public conveyances, or elbow you on the pavement; and, freed from the check on them at home, to aid in supporting the idle and vagabond life in London thoroughfares by day and night. Seriously, the balance of account is not even, between the seat of legislation and government, or what has been described as "the centre of commerce; the beginning, end, or *route* of relations with every part of the globe; the resort alike for pleasure or the pursuit of knowledge," and the country—which would contribute nothing to the required improvement and decoration which all would derive advantage from, or be ready to use. Since these remarks were written, however, the claims of the metropolis have been ably argued in the *Times*, in opposition to the view taken by the country members in the present Parliament.

We apprehend that the need of doing something for London is becoming such, that the several wants referred to must be supplied, or before long there may be consequences for which our legislators are not prepared. The true originating cause of an epidemic, a prevalence of crime and discontent, or a season of commotion and insurrection, is seldom looked into; and means of *prevention*, which, according to the most frequently repeated, but least applied of proverbs, would be better than "cure," are never offered.

The requirement which mainly we are now considering—not merely a common sanitary one—directly, as indirectly, bears upon the moral and mental health of the two and a half millions, and of the whole community. We do not say that a policy to be imitated, is that of keeping the people amused through devices for making holiday, as under continental governments. There is greater entertainment in looking at the forms of the created world, or realizing the impression of art, than in witnessing shows and festivals,—better managed abroad though these are, than with us,—from the prominent element of art which is made to contribute to them. But, what is a natural yearning should be allowed to expand,—as it might once have done—till "man made the *town*," with its pestiferous streets and crowded houses. In default of this, the substitute cannot but be sought. Vices of a degrading character, we believe, will prevail wherever there is an uninteresting sameness of objects. Much, doubtless, is being done by cheap literature—though in the absence almost, in London, of public libraries with standard works, not so much of value, we fear, as is sometimes supposed; and much may be effected by the growing appreciation of studies, such as natural history, which, with the aid of recently introduced contrivances, can afford the highest interest and instruction in-doors, and serve to help the effect of comfort, or the adornment in a home. But, even more than this is desirable; or rather, is wanted: variety and instruction such as there are in nature out of doors, still are required; and art is needed no less than when there were no books, and when science had no inducements for the people. To such end, it has to be recognised that natural beauty is to be provided for the dweller in towns; that variety of feature also must be presented; and that a combination of the forms of nature and art enhances the effect of each, and multiplies the variety.

Some of the peculiarly beautiful effects in flowers and foliage, in rocks and water—as in other natural objects—are those which are seen when architectural forms enter into the combination; and as we have considered, the aid to the expression of architecture, of objects of that kind, is such, that the especial character and beauty of the art is, perhaps, never thoroughly attained without it. If so, in English cities, as a rule, architectural effect is dependant upon what can be seen of the sky and clouds, or what may be called—borrowing a term from Chevrëul on Colour—the *successive contrast*, which the observer may happen to supply through his *recollection* of nature. It is impossible for him to realize the true beauty of architecture, who has not seen it in unclouded light, or free from the deadening influence of the smoky canopy which hangs still over London

Let it not be supposed that to the mere holiday-maker—the Cockney knowing we will say nothing of our art—of style, or order, or moulding—the exhibition of architecture, with trees and flowers, is useless, and without power of influence for any effect. He who thinks so should visit Rosherville, or any tea-garden about London, and note the fact of the use which is made both of architecture and sculpture,—use, we admit, which is bad use, and which gives no idea of the real beauty of a combination where good art prevails, but such as is sufficient for our argument as to the want that is felt, and the result which could elsewhere be attained. Similarly, in the terraces and gardens of the Crystal Palace, an effort is made to produce considerable effect, by a like principle of combination. The details of the architectural portion of the design there might have been better, but the value of the principle is made obvious.

Yet curious it is, that in those very "lungs of London,"—the public parks,—nothing can be culled from the same recognised principle of art to enhance the beauty of the scene, as by the use of the associated arts of architecture and landscape gardening. Not a lodge or entrance has been added during years past, that is even worthy of comparison with the works of the time of George IV. and of Messrs. Nash and Decimus Burton. The last of these architects especially, was allowed to do just enough to show what was wanted—if only by his screen and gateways at Hyde Park-corner. Several of the entrances, formed about the same time, are not without merit, though not of that kind which is now appreciated. Greek architecture, peradventure, may be undesirable for future selection; and when it was in favour, it might have been managed with greater skill in numerous instances; but it is depreciated even lower than is justified by the treatment of it in such cases as we have alluded to, or in those of park entrances in many parts of the country. The doubting reader who will accept the challenge at comparisons, is referred to Albert Gate, Prince's Gate, the entrance to Kensington-gardens from the Bayswater-road; and that newly-formed, to St. James's-park from Pall-mall. He will find it difficult, we think, to make out that in such matters art has offered any exhibition of advance, or that in any country in Europe there is less thought given to like works. It is difficult, in short, to discover any work into which art has entered, as executed in our parks during the long interval we have been referring to. Indeed, with the exception of the Serpentine-bridge, of a building or two in Hyde-park—as the Humane Society's Receiving House—which it forms no part of our present object to have added to,—of the Achilles, and of a solitary resting-place and fountain near the foot of the Serpentine, absolutely nothing now appears to exist,—or belonging to the particular branch of art which we have classed with landscape gardening. We except the new bridge in St. James's-park, as only just being completed. But to it we can return. Scarce an effort at combination—of ground plot and grouping—is there as to the palace, and the gardens of St. James's-park. An alteration of the present arrangement about the end of the Mall and Palace forecourt, was, it is true, projected, as our readers remember. One *object* at that time, corresponding with the general one we are putting before our readers, rather than any way proposed for attaining the object, deserves to be borne in recollection.

The improvements in the parks under the present *régime*, so far as they now demand notice,

* See p. 388, *ante*,—"Opposition to Sanitary Progress: the Proposed Parks."

have been confined to the increase of garden space, the cleansing of the ornamental waters, and similar measures of very great value, but not exactly what we have just now in view in the question of art. The broad, well-gravelled walks, intersecting the sward from gate to gate, are a boon to the pedestrian as compared with the former pathways; yet, be it observed, the alteration in the Green-park is considerable; the rural appearance is considerably impaired, and there is no substitute. Let the reader fancy new roads driven straight through the beautiful and uncultured parts of Hampstead before named; and a fair idea will be given of the operation of the interfering hand—albeit not of the relative extent of the changes. Now, in such cases—since good dry walks must be made, and occasionally without the fringe of flowers and garden ground which partly supplies the place of art in St. James's-park,—why not have introduced in the course of that unvarying line, a few simple pedestals with statues and flower-vases, a few breaks and recesses for the seats; and (were there any spot of sudden declivity) a flight of steps, with wings, terrace, and balustrades. The interposition of some such objects, or even others which are of a more simple kind, supplies a new effect in place of that which had to be sacrificed. These trifling suggestions for such a case, however, form a very small section of the contrivances through which architecture and art in general might be made to contribute to the beauty of our parks, as of our squares and other open spaces. The main object which we have in view, is to get the principle of the combination as a point recognised where any public works are needed, in which either architecture or landscape gardening, separately, may be supposed to come into play. We would undertake to prove that such a combination for effect, between nature and art, has been sought for in all periods possessed of any perception of the beauiful, and any acquaintance with the laws of aste. It was this perception which made the Athenian architect plant his temple on the Acropolis, and the dramatic artist and poet speak under the canopy of heaven, amid the ambient beauty of the sea and the hill-side. It was this that produced the intermixture of horticulture with art, which was seen alike in the houses of the Romans, the Moors, and the modern Italians, and still exists with the Chinese. In the Italian villas, the garden at the back, even where confined in space, was made a very beautiful feature. A piece of architecture generally terminated the site, and formed a background to the scene; and sculpture and fountains were there introduced as in other parts. The main feature referred to was the grotto,—of which, the term, but not the art, survives. Where the ground rose at the back, advantage was taken of the fact to introduce a succession of terraces and steps, like those which we have suggested in somewhat similar circumstances. In our own Elizabethan architecture, the balustraded terrace with its flight of steps, mingled with the foliage of the garden for the united result. At Haddon-hall, in Derbyshire, there is an excellent example of this combination: and it forms an annual subject for some exhibited drawing. Again, at Hampton-court, the combination of forms of architectural art with trees and flowers, is illustrated; as it is also in the approach bounded by sculpture at intervals, and overshadowed with cedars, to the portico of the villa at Chiswick. Pleasing effects, such as may illustrate the argument, can be observed in Kew-gardens. Chambers, who laid out the grounds there, has left appended to his "Treatise," several designs of the character which would be appropriate for the London parks—were *buildings*, rather than minor objects of architectural art, now especially in question.

Not only by the introduction of terraces, at various levels, but by all the other architectural and sculpturesque aids to landscape gardening, you increase both the variety or interest, and the apparent space. But, the aim should be—in conjunction with the addition of garden-ground to our open spaces—to introduce always a number of architectural and sculptural accessories. Lodges, piers and gates, and boundary walling, railing, and lamp-posts; statues and fountains; terraces and steps; balustrades and vases; sunk gardens, grottos, and alcoves; screens and porticos; colonnades and arcades; bridges and boat-houses, are some of the subjects on which architectural art could be exercised with the greatest advantage. Many such accessories—as for example, the sunk gardens and terraces—could be introduced with the greatest advantage as features in our squares. Ground such as there is in the squares, should be more frequently devoted to the public. Lakes, streams, and waterfalls could be made to do more towards the beautiful than at present. Witness for what does exist, the very ambitious design of the emissary of the Bayswater sewer, and that of the railing and boundary of the opposite or lower end of the Serpentine. What became of the columns of the Quadrant? Might they not have been set up in the manner of the Italian colonnades, roofed with trellis-work and twining plants? What has become of the fragments of many an old portico or gateway, as well worthy of being put together in Hyde-park, as Inigo Jones's gate was by Lord Burlington at Chiswick. The columns of the portico at Wanstead House, one of the most admired of the works of Colin Campbell, were last heard of in a dealer's yard.

Amongst the improvements required in Hyde-park, is that of a road from north to south, near Kensington-gardens. This want has often been spoken of. We notice it here to say, that the very provision of the communication—which would probably be by sunk way, as suggested in these pages—might be made to serve some of the objects we have been considering.

Also, it may be hoped that the intended memorial of the Exhibition of 1851 will be erected on the site of the building of that year; and that architecture and sculpture will both contribute through such agency, to the object here treated of. The present Chief Commissioner is fully disposed to go with us, and only needs support from without.

The comments on the original plan, and those on the present appearance of the bridge in St. James's-park, help to show that our subject is very far from being now understood. It was a view of the matter that we could comprehend, that any interruption to the prospect was not desirable; but not so that which, on the one hand, ignored the fact that a bridge of stone or iron may be made a beautiful thing in itself, and grouping advantageously with the natural objects, and on the other hand, presumed that a "light suspension-bridge" would be as it were, without any effect whatever. The opinion of some of the authors of designs in the Government Offices competition, as to the chains of Hungerford-bridge, and the prospect along the river, may be referred to. Giving up the idea of a carriage-way, a foot-bridge *à fleur d'eau* might have answered all objects of convenience and taste. The present bridge interrupts the prospect no doubt more than those who sanctioned it anticipated. But in itself, the design does not deserve the condemnation which some writers have thought themselves justified in expressing.

Criticism of the kind just referred to, however, makes us more than ever anxious as to the future of our art — dependent so largely upon public appreciation. What is to be hoped for, if the first care of the judge is to convict, and on conclusions not drawn from thought, or reason, or experience, but by mere *ipse dixit* of a man destitute of art-education and taste, possessing no claim to the office of the teacher, and forming his opinions solely from the detection of a resemblance to some supposed vulgar or familiar form or object. Architecture requires now for public teachers, men at least generous and capable of being warmed to admiration. Wanting these, the art will never grow to great elevation in England. The self constituted critic—really nothing feeling, and nothing knowing—will continue to pick out supposed defects, or award unqualified censure,—for, the man who finds fault, in art, half the world thinks *must have* superior knowledge. He is rather just the reverse of this. The public contract the habit of assuming to judge; and to censure—where the fault lies in their own physical and mental unsusceptibility. The very profession is infected by the disease, and the extreme classicist or the mediævalist is incapable of appreciating architecture in the abstract, and the beauty which may exist in any style. We believe that architecture is capable of conducing more than it has lately done, to real public enjoyment and good. The British people must be made to feel that the art has a character and purpose beyond that which it has lately reached; and we know no means so valuable for such an office as we contemplate for it, and other ends, as the means which we have suggested.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

IT appears to have been reserved for modern antiquaries to discover that the pursuit of their art may be rendered pleasant and enjoyable, and that their labours may be smoothed and enlivened by what is so agreeable to the physical organization of the student, and, consequently, so strengthening to his mental powers—a change from the narrow confines of the study to the free, broad, blooming country itself. Your antiquary is ceasing to be the isolated and eccentric individual whom the satirist has regarded as fair game for his wit. He has acquired a turn for social gatherings and journeys made in company with his fellows; and although he is as deep in his literary researches as his predecessors, he does not stop there, but, like General Suwarrow, "goes and sees." "*Coup d'œil*," said the old Russian veteran, "*coup d'œil* for me!" The antiquary echoes the sentiment; and, composed as the British Archæological Association is, there is no occasion for wonder that they make successful assaults on ancient castles (happily without the loss of a single life), and gain instant admission into old abbeys without asking the permission of my Lord Abbot, whom God assoyle!

This was the case last week in the "east countrie," of which Norwich is the principal city, and which was selected by the British Archæological Association as the scene of their fourteenth annual congress. Some of the remains the Association inspected are almost entirely engulphed by the inexorable past; but the archæologist may say to Time triumphantly,—

> "You may break, you may shatter the vase as you will,
> But the scent of the roses will cling to it still."

The old associations still hang on the trembling walls, the old traditions still cling about the mouldering stones; but we must proceed to details, although we ought to add that some of the objects of interest visited by the Association are in a better state of preservation, and others in a state of restoration,—a circumstance which appears to excite a feeling of dissatisfaction in some minds having a strong antiquarian bias.

Armed with large and resplendent pieces of pasteboard, the members of the Association assembled, on the afternoon of Monday, 24th ult. at the by no means attractive, so far as the exterior is concerned, Guildhall of Norwich. The council chamber, in which they assembled, to some extent redeems the building, and the fine stained roof and grim old portraits on the walls accorded well with the character of the meeting. The Earl of Albemarle, who had been selected as president for the year, was introduced to the meeting by Mr. Pettigrew, and the proceedings commenced with the interchange of a few compliments between his lordship and that gentleman, and some expressions of welcome from Sir John Boileau, on the part of the Norfolk Archæological Association.

Mr. Pettigrew next read a valuable paper "On the Antiquities of Norwich and Norfolk." The paper stated that Norfolk is 210 miles in circumference, and comprises thirty-three hundreds and divisions, containing 700 parishes. The name Norfolk literally implies Northern-folk, as Suffolk implies Southern-folk. The county of Norfolk, with Suffolk and a portion of Cambridge, comprised the Roman province of the Iceni, and the Saxon kingdom of East Anglia. In form the county is that of a wedge, and Camden derives the name Iceni from *Iken*, a wedge. From Tacitus several particulars may be learned of the ancient history of the county. After having submitted to the Romans, it remained peaceable till the reign of Claudius Cæsar, when Ostorius induced the people to revolt, and the wars with the Romans, under Boadicea, who died by poison in the year 59, were the result. Several Roman stations may be traced in Norfolk, with Roman coins and other antiquities of the period. Alfred, when he subdued the Danes, erected, in the words of an ancient chronicler, "a fortress both of brick and stone," and the same monarch also improved very greatly the fortifications of Norwich. The castle, therefore, bears a very early date. Coins of Alfred, Athelstane, Edward the Martyr, and Etheldred, have been found in the locality. On the occasion of the massacre of the Danes, which was revenged by Sweyne, Norwich was burnt and wasted, and a new city rose on the ruins of the old buildings.

In 1010 the Danes made a settlement in the locality, and re-fortified the castle, the original foundation of which is ascribed to Gurguntus, son of Bellinus. It was surrounded by three ditches, in consequence of which there have been numerous disputes as to the original character of the building, some declaring it to be British, others Saxon, and a third class of disputants affirming it to be Roman. The charters of the City of Norwich date from the time of Henry I. The original charter was renewed by Stephen, who first gave the place a corporation. Charters were also granted by Richard I. John, Henry III. and Henry IV. The last sovereign made Norwich a county of itself, and vested the government of the city in a mayor, aldermen, two sheriffs, a recorder, a steward, and a common council, consisting of sixty members. The walls of the ancient city of Norwich were three miles in circumference, and were flanked by a great number of towers. Portions of the walls still remain. There were also twelve gates, and within the city six bridges. Merchant's marks are very common in Norwich, and were employed chiefly from 1300 to 1600. The monasteries and convents of Norfolk and Norwich were, in early times, very numerous; and several ancient guilds, established for the advancement of trade, charity, and religion, flourished in the district for a very long period. Adverting to the cathedral, Mr. Pettigrew said,—The Norwich Cathedral Priory may be characterised as mostly Norman, having a long nave, choir with semi-circular east end, transept, dormitory, refectory, and strangers' hall. A small portion only will be found to belong to the Early English period, and in this style will be found a portion of the strangers' hall. The chapter-house, cloisters, and cellar belong to the Decorated period, and examples of the Perpendicular may be seen in portions of the choir, which also characterise a part of the cloisters. The first stone of the Cathedral Church of the Holy Trinity was laid by Herbert de Lozinga, in 1096, and sixty monks were therein placed, and in the adjoining priory in 1101. They were Benedictines. Mr. H. Harrod thinks the church of Herbert to have been built on the site of a more ancient one, dedicated also to the Holy Trinity. It appears, however, that the Cathedral Church was commonly called Christ Church; and early references are made to it by Tifled and by the chronicler Ingulphus, under date of 1076. It is curious that whilst in the wills of the upper classes it is styled Church of the Holy Trinity, in those of a more humble description it is called Christ Church. Of these peculiarities, Mr. Harrod has cited several examples. Mr. Spurdens has proved Herbert to have been an Englishman—not a Norman, as generally supposed; that he was borne at Syleham, in the Hundred of Hoxne, in Suffolk; and that the appendage "de Lozinga," almost uniformly attached to his name, must have been a nickname given to him by his detractors after his decease. The cathedral was damaged by fire as early as 1171: a century later, it was again ravaged by that element. Two gates give entrance to the precinct—the upper, St. Ethelbert's Gate, built by the citizens after the fire of 1272; the lower, known as Erpingham Gate. Upon this the word "Pena" has been often recorded to be inscribed, and the building of the gate is said to have been erected as a penance or punishment to Sir Thomas Erpingham for his supposed Lollardy. This word, however, is not "Pena," but "Yenk," and means "Think:" it is, in short, Sir Thomas's motto, "Beware." With regard to the time of erection, Mr. Harrod justly infers that it must have been subsequent to 1411, as the arms of his two wives occur upon it, and he did not marry Joan Walton until this year. His first wife was Joan Clopton. He died in 1428, and, together with his wives, was interred in the north aisle of the choir, but his tomb has been destroyed. The fine stone vaulting in the nave is attributed to Bishop Lyhart, whose rebus frequently occurs. He was bishop between 1426 and 1436. The bosses of the roof and the cloister formerly presented an immense number of historical figures, amounting (according to Philip Browne) to 328 in number, curiously carved. The series extended in subjects from the Creation to the Last Day of Judgment. The painting and gilding of these have been entirely removed by a coating of stone-coloured wash with which it was disfigured in 1806. A circular opening between the west door and screen, of considerable size, has often been a subject of conjecture and discussion. Mr. Harrod has, I think, solved the question, by reference to an extract from "Warton's History of English Poetry" (vol. i. page 240), taken from Lambarde's Topographical Dictionary. It runs thus:—"I myself, being a child, once saw in Poule's Church, at London, at a feast of Whitsuntide, whearc the coming down of the Holy Ghost was set forth by a white pigeon that was let to fly out of a hole that is yet to be seen in the mydst of the roof of the great ile, and by a long censer which, descending out of the same place almost to the ground, was swinged up and down at such length that it reached at one swepe almost to the west gate of the church, and almost to the quier stairs of the same, breathing out over the whole church and companie a most pleasant perfume of such sweet things as burned therein." Mr. Harrod has observed, in a very casual peep at the Sacrist Rolls at Norwich, charges made for letting a man down from the roof habited as an angel, with a censer to cense the rood. This feat, he observes, could have been accomplished from the hole I have alluded to. The tower, Early Norman, must be esteemed for its grandeur and beauty. The lofty perpendicular spire is also entitled to our admiration. A painted wooden reredos, formerly in the cathedral, has been removed, and fixed in a corner of the vestry. It belongs to the fourteenth century, and represents, in five compartments, the Scourging, Bearing of the Cross, Crucifixion, Resurrection, and Ascension. Its recovery is due to Mr. Harrod, who found it doing duty as a table for sorting paper in the treasury, turned bottom upwards. The stalls (subsellia), or misereres, as they are vulgarly and ridiculously called, are numerous in the Cathedral. Mr. Harrod enumerates the subjects carved upon 62 of these—the number required for prior, sub-prior, and 60 monks. They present personifications of saints, emblems, heraldic bearings, and many are very grotesque. Several exhibit much skill, and their execution has been assigned to about 1480. In a Norman niche, above the north door exteriorly is a sculptured figure of a bishop, which has been conjectured to be a representation of Bishop Herbert, the founder. The cloister has received much and deserved attention from Mr. Harrod, who is warm in his expressions as to the magnificence of its area, the beauty and variety of its architecture, and its marvellous roof. It is not, however, the Norman cloister, and whether that was of stone or wood is unknown. The present cloister dates no earlier than the close of the 13th century, and may be considered as belonging to the beginning of the decorated period. The fire of 1272 destroyed the original cloister. There is a particular account of the building of the present cloister by William of Worcester, preserved in Christ Church College, Cambridge, and the date given to the commencement of the work is fixed at 1297, and by Lord Ralph Walpole, then Bishop of Norwich. This is confirmed by a stone in the west part of the cloister with this inscription:—"The Lord Ralph Walpole, Bishop of Norwich, placed me here." The inceptor and designer is in like manner distinguished on another stone by an inscription—"Richard Upphalle placed me." The door into the cathedral is remarkable, and has been figured by Carter and Britton. Mr. Pettigrew also made some interesting observations on the rood screens and rural paintings of the district. The examples, he said, are yet numerous, although many fine specimens have disappeared. Painted rood screens were more numerous in Norfolk than, perhaps, all other counties together. Three hundred at least, according to a calculation made by the Rev. Richard Hart, must have been destroyed by the Puritans, and the subsequent neglect of them. They are fine illustrations of mediæval art, and good examples are remaining at Worstead, Barton, Marsham, Aylsham, and Ranworth, of the latter of which Mr. Hart has given us a plate. He has also exhibited the peculiarities in the colours employed, and the means of applying them. Of a very extended and remarkable example at the church of St. Andrew, at North Burlingham, the Rev. John Greene has given an account, and attempted a synoptic table to facilitate description and aid in comparison. No one has, however, yet followed so excellent an example.—The subjects on this screen are most diversified, and present representations of various saints, virtues, powers, angels, archangels, &c. The table embraces the subjects on the screens at Barton, Irstead, Ranworth, Lessingham, and North Burlingham. The Rev. James Lee Warner has also described a screen at Houghton. Mural paintings have been discovered in several Norfolk churches. Mr. Dawson Turner has a fine collection of drawings of them, thirteen relating to Catfield Church, of the time of Edward III. He is of opinion that a large proportion, and possibly the whole of the Norfolk parochial churches, had their interior walls originally ornamented with paintings, and that these were the work of different hands, from the saints, &c., on the rood loft screens, and were also very inferior in point of execution. The Very Rev. F. C. Husenbeth has minutely described the subjects—The Wheel of Fortune; the Tree of the Seven Deadly Sins; the Contrary Virtues; Baptism; Confirmation; Penance; Confession; Matrimony; Extreme Unction; Crucifixion; the Samaritan Woman and the Saviour at the Well of Jacob; St. Luke; Nathan and David. These are not to be considered as altogether perfect, but sufficiently so to enable the subject to be discerned. Another mural painting was found at Wimbotsham Church, representing St. Christopher with the Infant Saviour; and at Crostwight Church there are the Deadly Sins, St. Michael, St. Christopher, Christ before Pilate, the Confession, &c.; at Ditchingham Church, the Resurrection, and other subjects, as at Wymondham. At Drayton, Mr. Husenbeth has described St. Christopher, St. George, Christ appearing to Mary Magdalen, Consecration Crosses, the Saviour. At Cawston, the Rev. James Bulwer has made out St. Agnes; whilst at Brook, the Rev. William Beal has found the Creed written in eleven small narrow parallel columns, extending the whole width of the church, in colours, red and black. This was on the western wall, so that clearly at the time in which it was executed—probably about the commencement of the Reformation—it could not have been the practice of worshippers in reciting the Creed to turn towards the east. The commandments were also written on the wall, and there is also a curious representation of an alewife similar to the one engraved by us from a Miserere in Ludlow Church. The ale represented as being drawn from the barrel is personified by flame. An angel above is issuing also forth in fire, and flames are beneath the woodwork on which the barrel rests. In the course of his paper (which was ordered to be printed in the Transactions of the Association) Mr. Pettigrew referred, in terms of high praise, to the labours of the Norfolk and Norwich Archæological Society, who, he said, had brought to light a great number of interesting facts.

The paper concluded, the company left the Guildhall and proceeded to the castle. Here Mr. Fitch, who acted as cicerone, pointed out that the building was placed on the top of a lofty hill, neither circular nor quadrangular in shape, but partaking a little of the character of each of these forms, and that it was surrounded by at least one large ditch, which is still apparent and completely round it. The original shire-house (we are quoting Mr. Fitch's observations) stood in nearly a straight line with the bridge in the centre of a space now used as a cattle-market; and the buildings in the ditch surrounding it, and lying to the east of it, were in the castle fee or bailey, under the jurisdiction of the constable of the castle, where stood the church of St. Martin in the Bailey, and where doubtless eighty unoccupied houses mentioned in Doomsday were situated. All the castle buildings are now gone, except the great tower. The restoration of this may have been desirable, and absolutely necessary, but the antiquary can no longer discover the features of his old friend under the mask of Bath-stone with which it is now encased. The keep or great tower remarkably resembled in arrangement that of Castle Rising, which, although smaller, is much more complete. At Rising, for instance, the main wall dividing the tower into two parts is nearly entire. Here all trace of it is gone, except on the internal face of the west wall which has the outline of it shown by modern brickwork. The great tower stands on the south-west part of the hill, the stairs of entrance on the eastern side being nearly opposite the way over the bridge. It is nearly square, being 92 feet by 96 feet, the greater length being from east to west. The walls were, as is so frequently the case, composed of stone from the nearest quarries; those of Northampton stone faced with Caen stone. The surface of the lower compartments on the west and south sides of the exterior was of faced flints, a facing which has entirely disappeared in the restoration. As it was not a mode of construction of the Norman period, this peculiarity may fairly be put down to repairs two or three centuries later. The basement story of the tower was plain, and was formerly of common faced flint work, worked with small loops at regular intervals, and above that to the battlements were a series of arcades of Norman arches of a plain and effective character. In the lower arcade, on the south side, a corbel stone, in the form of a lion's head, set very oddly in the third panel, puzzled many; but an inspection of the interior of the wall would have enlightened them—it is the vent of a drain from a small arched niche in the interior. The north side differs from the others in having six buttresses instead of five, and Mr. Woodward conjectures, with all probability, as a large hall occupied great part of that side of the tower, that it was original and intended to give additional strength to the wall. Both Norwich and Rising are entered through an eastern tower, by a staircase extending the whole of the eastern side. At Rising this is nearly in its original state: here, unfortunately, many repairs and alterations have taken place, and what is now presented to view is but an approximation to what it must originally have been. In one respect the modern aspect differs entirely from the ancient, for whether the stair was at any point broken by a drawbridge, or only stopped once or twice by a portcullis, there can be no reasonable doubt that at the south side of the entrance, or, as it has been named, Bigod's tower, an arch of entrance originally existed. There was no entrance into the great tower from below. The space below, although vaulted over, has no apparent opening to it, and therein entirely agrees with Castle Rising. On

the west, or main wall of the great tower, is a double doorway, spanned by an arch of great size. This arch is all excised work, and, consequently, very early. It is supported by four columns. Upon the first capital on the left side is a huntsman, with a sword by his side, and a horn in his right hand; while with his left he holds a dog in slips, which appears to be attacking an ox. On the second capital is another huntsman, spearing a wild boar of unusual size: his left side is covered by a long-pointed shield. The subjects on the capitals on the right side are doubtful. This arch, as at Rising, undoubtedly opened into a large and lofty hall, having a range of windows on the north side, some above and by the side of Bigod's tower in the east wall, and some traces of which may still be seen in the western wall. The main wall of which I have spoken as dividing the great tower in the centre, ran east and west, and the other half of the floor, of which the great hall occupied the north side, had on the south two equally lofty apartments, the west one being the larger of the two, and having the convenience of a large fireplace. The corresponding room at Castle Rising has been conjectured to be an armoury. It may have been the original intention here; but it will be remembered that from the time of Henry III. if not before, the exclusive use of this great tower was the confinement of prisoners; and therefore here, as at Newcastle and other places, this large room may have been appropriated to a better sort of prisoners, who desired better fare than the rest, and had the means of paying for it. The third room has been the source of much speculation. It had, at its south-east corner, an arch, opening in a recess, in which are various rude carvings, wherein one antiquary sees the altar-piece of a chapel, another only the efforts of some half-demented prisoner. The entrance to this oratory is through an arch, supported by two columns, the capitals of which are ornamented, that on the left by an elegant figure on the front: at the angles are pelicans vulning their breasts. The capital on the right is exceedingly interesting: its style is peculiarly Norman. Among the carvings in this oratory is the representation of the Trinity. The Father is seated, having a crown on his head; and the infant Jesus on his right arm; and below the child, a dove. The second, St. Catherine crowned, having a small wheel in her right hand; the next is St. Christopher, a gigantic figure, much defaced, having a staff in his right hand, and the infant Jesus on his left shoulder. These figures appear to have been coloured: they bespeak an early period. Beneath these on the left, is another sculpture, in better style. The walls and loops of the oratory are covered with armorial bearings, devices, and parts of figures. I call your attention to the fact of the existence of galleries in the thickness of the walls, which were originally entered by the smaller of the two doors in the entrance tower. This opened by a short passage into a newel staircase, at the north-east angle; and from that staircase, at a little elevation above, the gallery on the north wall commenced. This runs along, passing in front of the great windows of the hall, at a considerable elevation above the floor of it, and passing the remarkable flue at the north-west angle, called the kitchen, communicated with a western gallery, which, running behind the pantries of the hall, communicated with a remarkable series of cloacæ. The south-west angle also has a newel staircase, as at the north-east, and answering a similar purpose of communicating between this floor and the dungeons below, and with the platform and upper gallery of the tower above. At the present time, the communication between the western gallery and the southern one is stopped. The eastern passage, starting from nearly the same point as the northern one from the north-east staircase, runs first past the windows lighting the hall, and then those lighting the corner room, in which the oratory stands, when turning into the south wall, and running into the upper windows of this room, it descends several steps, and reaches the level of the windows of the gallery and armoury on the south, bending at one point to pass the flue of the great fireplace of that apartment. Mr. Harrod has pointed out that the great tower was covered in by two roofs, of high pitch, ranging east and west, the external wall, to the depth of the two upper arcades, masking them. The marks of them will be easily seen on the inside of the west wall.

From the castle, into the dreary regions of which, as Mr. Fitch observed, the incursions of crinoline were never contemplated—the Association proceeded to the fine old church of St. Peter, Mancroft. The restorations of this church, which is one of the finest in Norwich, have been frequently noticed in the *Builder*, and they appeared to receive the approval of the visitors. In the evening a *conversazione* was held at the Guildhall, at which Sir Fortunatus Dwarris read a paper on the privileges of sanctuary formerly accorded to churches, and their precincts, monasteries, and other religious houses. We may, perhaps, advert to this paper, which displayed great erudition and research, on a future occasion. Mr. J. R. Planché also contributed a paper on "Raoul de Gael, first Earl of Norfolk."

On Tuesday morning the first object visited was St. Andrew's Hall, a portion of the old convent of the Black Friars. Here Mr. Pettigrew read a paper which stated that the great hall of St. Andrew, now used for civic, festive, and charitable purposes, originally constituted the nave of the conventual building, and that which is known as the Dutch Church formed the choir. The periods embraced by the building were the Decorated and the Perpendicular, and it did not, therefore, lay claim to a very early date. The settlement of the monastic orders in Norwich must be ascribed to the thirteenth century. The Black Friars, or Dominicans, took the lead in 1226: about the same time probably the Grey Friars or Franciscans appeared: the White Friars or Carmelites were thirty years later; and the Augustine Friars as late as 1290. Limits were in 1259 assigned to the Black Friars of Norwich and those of Dunwich, the former being assigned the county of Norfolk to beg in. In 1262 the Black Friars of Norwich received a bull from Pope Urban, directing them to preach a crusade for the relief of the Holy Land, at that time overrun by the Tartars. To such an extent was the obtaining of money carried, that by a bull the friars had given to them the power to absolve all who for laying violent hands on religious persons, and for burning of churches and other religious places, &c. were under sentence of excommunication, provided they made satisfaction for the damages done. The Black Friars first established themselves on the other side of the river (Wensum), and, in 1307, they removed, having obtained the house of a smaller penitential order, the Friars of the Sack. The first house, according to Kirkpatrick, was on the north side of Colegate, near the chapel of St. John the Baptist, over the water. This church they possessed about the year 1250, and there made their monastery, extending it from time to time. In 1307 they obtained the house of the Friars de Pœnitentiâ, and the former habitation was then called the "Olde Freres Yerde." The second house was obtained upon the suppression of the Friars de Pœnitentiâ by a charter of Edward II. by which they held their habitation by the payment *in capite* of 1½d. yearly. In 1332 a complaint was made on the part of the citizens to Edward III. accusing the friars of having, to the detriment of the city, obtained divers lands and tenements without inquisition. An inquiry was ordered into the matter, but in 1345 a charter was granted by Edward III. confirming to the friars all their new acquisitions. In the midst of the large extent of land they thus acquired they built their church, on the north side their cloisters, and next the river side their malthouse and brewhouse. The ground on the south side of their church they kept void, to serve for a large preaching yard. The church was extraordinarily large, as sepulture in such buildings was coveted by rich persons, who gave large sums of money for the favour. The earlier part of the building belongs to the Decorated period, including the beautiful portion known as Becket's Chapel. A finer church is conjectured to have been built between 1345 and 1350, but the convent was burnt down in 1413 or 1414, and the monks were obliged to return to their former house, from which, in 1449, another fire expelled them. They then returned to St. Andrew's parish. The church was rebuilt in a more sumptuous manner in the reign of Henry VI. The convent received benefactions from others not desiring burial in the church, and the friars parcelled out their own merits to such as should be inclined to purchase them by letters of confraternity. The number of the credulous in such matters appears to have been considerable. The friars carried the instruments about with them, a blank being left for the insertion of the recipient's name. The records of the monastery showed that, in 1470, Isabella, the Queen of Edward IV. together with her daughters and suite, lodged therein. The Black Friars of Norwich was one of the few conventual establishments which escaped demolition in the reign of Henry VIII.; but in 1540 a charter was granted by that king, by which, in compliance with a request by the citizens, the whole house and site of the convent were granted to them upon payment of 81*l.* and 9*s.* sterling per annum into the Court of Augmentations of the Revenues of the Crown. Possession of the land was not obtained, however, without a further payment of 152*l.* four years afterwards. In the hall, the citizens, with the mayor, aldermen, &c. were wont to assemble on public days to hear mass, but in the first year of Edward VI. the proceeding was put down by Act of Parliament. The Dutch obtained a grant of the chapel in 1625, and it has continued from that time. Other parts of the conventual building were appropriated as granaries and places of deposit for various purposes. The friars do not seem to have been beloved by the citizens, although the houses of friars and other monasteries served frequently as places of refuge for felons. The preaching-ground became a garden, and then a burial-place for those dying of the plague, a portion of it continuing to be used for preaching.

St. Andrew's Church was next visited, and copies of some of the brasses, which attracted considerable attention, were taken. The notice of the company was also directed particularly to the east window.

About one o'clock the party assembled in St. Luke's chapel, at the cathedral. Here Mr. H. H. Burnell gave some historical details of the sacred edifice, through which he afterwards conducted his auditory, adding further *viva voce* explanations in Jesus chapel, and at other points. With reference to the orifice in the roof above the nave, from which it was alleged that a man had been let down to represent a flying angel, Mr. Burnell argued, that, from the small space, a man could not be swung safely, so that the experiment could have been tried only once. The Rev. J. Bulwer observed that in Roman Catholic churches at Madeira and Lisbon he had seen rose leaves and broom leaves thrown down from the roofs over the congregations. Mr. Burnell said he had seen a shower of bay leaves from holes in the ceiling of a church in Rome. Mr. Planché expressed his opinion that the fact ought not to be ignored, that there was a record of a man having been paid to descend from the roof as an angel. It might have been done at a particular ceremony, and not repeated.

From the cathedral the transition was easy to the episcopal palace. This building has an unpretending exterior, but possesses some interesting historical associations. It is situated on the north side of the precincts, and is reputed to have been erected by Bishop Salmon, in 1318, upon the site of a former building. It suffered greatly during the civil wars, and the great hall was converted into a meeting-house during that fanatical period, while other portions were let off. In 1656 the great hall, which is 110 feet long and 60 feet wide, was demolished; but at the Restoration Bishop Reynolds repaired the building at considerable expense. The lapse of time has now rendered further reparations of a minor character necessary in several of the apartments, which wear rather a dingy air. The Bishop, not being in Norwich, was not able to receive his visitors in person. The kitchen of the palace, by the way, is a large and lofty apartment, with a vaulted roof, and appears to possess great culinary capabilities.

Leaving the palace, which possesses some pleasant gardens, the company proceeded to inspect some of the numerous churches of the city. The intense heat of the weather greatly reduced, however, the numbers of the party. Those who had sufficient persistency to press on were greatly struck with the exterior of the church of St. Michael, at Coslany, which is a beautiful specimen of flintwork, inlaid with other material.

The remainder of the afternoon was occupied with an excursion to the Roman remains at Caistor. Copies of a letter by Mr. Hudson Gurney, contending that Norwich, and not Caistor, was the site of the Venta Icenorum, were distributed; and Mr. Fitch read a historical and descriptive paper, in which he favoured Mr. Gurney's conclusion. Mr. Vere Irving (Scotland) appeared to incline to a contrary opinion. Sir John Boileau described the results of some excavations which had been made on the spot, and which had led to the discovery of a square building, the floor of which seemed to have been carefully beaten down. No conclusion could be arrived at with reference to the object to which this building was applied.

In the evening another *conversazione* was held at Norwich, when the moot question of the Venta Icenorum was again discussed, and adjourned. A paper by the Rev. Dr. Husenbeth (R.C.), on sacramental fonts in Norfolk, followed. The term "sacramental fonts" was used to designate those baptismal fonts in old churches which are ornamented with sculptures of the seven sacraments of the Roman Catholic church. A few remarks were offered, in a paper by the Rev. Beale Poste, on some representations of minstrels in early painted glass, formerly in St. James's Church, Norwich; and Mr. W. H. Black (palæographer) described a short examination he had made of the records in the possession of the Dean and Chapter of Norwich Cathedral, and stated that he had received permission to make a further investigation.

Early on Wednesday morning, the members entered on a tedious railway journey—48 miles in three hours—to King's Lynn, where they arrived shortly after ten o'clock. The party proceeded direct to the Red Mount, and afterwards to the Grey Friars Tower. The Red Mount is also called the Lady's Chapel, and consists of an octagonal wall of red brick, with a cruciform chapel inside, measuring, from east to west, 17ft. 7in., by 14ft. from north to south, and 13ft. in height. The Grey Friars Tower is a fine hexagon steeple, which serves as a land-mark to vessels entering the harbour. Shortly after eleven o'clock, a meeting was held in the assembly room of the venerable and beautiful town-hall, where the corporation

regalia, seals, charters, and other ancient documents were arranged for inspection. Observations were offered on these charters by Mr. W. H. Black, who possesses an extraordinary power of reading old monkish Latin, Norman French, &c. Mr. Planché made some remarks on the sword reputed to have been taken by King John from his side and presented to the corporation of Lynn. As regarded the hilt of the sword, Mr. Planché considered the decoration was of the date of Henry VIII.: the blade was not of the time of that monarch, and was probably an older one. With reference to King John's cup (now at the Manchester Exhibition of Art Treasures), Mr. Planché said he must throw over the idea that it was presented to the town by John, because the whole of the decoration and the enamelled figures were certainly as late as the early part of Edward III. It was possibly an obit cup. Mr. Alan Swatman, who had communicated a good deal of local information on other subjects, said he hoped shortly to be able to establish Mr. Planché's theory by a perusal of the records of the Trinity Guild, to whom the cup belonged. A "ducking stool for scolds," which was exhibited in the room, attracted some attention; and the party next proceeded to St. Margaret's church, a noble pile, capable of seating from 1,000 to 2,000 persons. The interior has rather a metropolitan than a provincial appearance, and in its general features presents some resemblance to St. Martin's-in-the-Fields, although, of course, the details are widely different. At the end of the chancel is a fine circular window with ten transverse mullions. At the west end of the church are two lofty towers, from which a wide bird's-eye view can be obtained of the town and harbour, and of the vast tract of waste land, now in course of reclamation—the Wash of former times, in which King John is said to have met with dire misfortunes. There is said to have been originally a lofty tower or lantern at the intersection of the cross aisles, and a high spire also surmounted one of the western towers, which display different styles of architecture. St. Margaret's church and priory were founded by Herbert, Bishop of Norwich, in the reign of William II. and dedicated to St. Mary Magdalen, St. Margaret, and all the maiden saints.

After luncheon at the Globe Hotel, the party proceeded in omnibuses to Castle Rising. When they had nearly reached the Castle, the Rev. James Bulwer, who was on the top of one of the omnibuses, was unfortunately thrown to the ground as the vehicle passed sharply round a corner. The rev. gentleman sustained a simple fracture of the right leg, and his system was also a good deal shaken. He was removed at once to Lynn, and Mr. Pettigrew followed him in a carriage, kindly placed at his disposal by Sir W. Folkes, bart. The melancholy accident produced much gloom and depression, but after a short interval Mr. Black read a paper prepared by Mr. Pettigrew, "On the Castle," Sir Fortunatus Dwarris being called to the chair, that is to say, to a central standing position among the little knot who assembled on the green sward, between the ruins and the mound by which they are surrounded. The writer described the Castle, in his paper, as an illustration of Norman castrametation. Various possessions which the Conqueror had bestowed on his half-brother Odo, the Bishop of Bayeux, were, upon Odo's rebellion against William Rufus, transferred to William D'Albini, to whose son the erection of Castle Rising was attributed. William D'Albini married Adeliza, the widow of Henry I. and then assumed the title of Earl of Arundel, but was afterwards created the Earl of Arundel. The castle passed to the four co-heirs of Earl de Warenne and Surrey, in 1243; and, upon the partition of estates, the castle and manor of Rising were assigned to Roger de Montault in right of his wife Cecily, whence it descended to Robert de Montault, of whom, and his contests with the corporation of Lynn, Mr. Swatman had given a very interesting account in Harrold's "Castles and Convents of Norfolk." By various hands it passed through the family of the Dukes of Norfolk, and now belonged to the Hon. Mary Howard, widow of Lieut.-Colonel Fulke Greville Howard, second son of the first Viscount Templeton. Mr. Harrod suspected, from the similarity of the arrangements in the castles of Norwich and Rising, that the same architect designed both of them. At one time Castle Rising was in the possession of "the she-wolf of France," Isabella, queen-dowager of England, and here, by some chroniclers and historians, her imprisonment and death had been affixed, but Mr. Swatman questioned the accuracy of these opinions. Indeed, it had been pretty clearly proved that her death took place at Hertford. The castle itself was built within a circular space, inclosed by a bank and a ditch, and additions had been made to the castle, east and west, under a similar arrangement of earthworks. The parts now remaining consisted of the great tower or keep, the chapel, the gate-house, and the walls of the constables' lodgings, a brick building of the time of Henry VI. The destruction of the castle apartments was rapid, for, in the 22nd Edward IV., "there was never a house in the castle able to keep out the rain-water, wind, or snow;" and in the 19th Henry VII. various parts were under reparation. With the destruction of walls, the whole area of circular work was buried several feet deep, and Colonel Howard removed many thousands of loads to level the earth about the great tower to the base line of the building. Some discussion followed on the residence of Queen Isabella at the castle; and it appeared to be the general opinion that it was a kind of honorary imprisonment. Mr. Alan Swatman having afforded some curious information with reference to a law-suit between Lord Montault and the townspeople of Lynn, in which the latter were cast in 3,000*l.* damages—an immense sum in old times,—Mr. C. E. Davis added a few further *vivâ voce* comments on the castle, and also referred to the remains of an ancient church in the mound, probably of the date of the eleventh century, and of the same form as the small churches in Ireland. The company then passed up the broad staircase of the castle, and gazed down into the great hall, once, no doubt, a scene of pomp and splendour. *Quantum mutatus!* There were fowls "clucking" on the floor, and straw was littered down in one niche for some domestic animal. There was, however, scarcely any time allowed for moralizing on the scene, as the time for returning to Lynn had nearly arrived. A hurried visit was, nevertheless, paid to the parish church, which has been lately restored in the highest possible style, and elicited warm expressions of admiration. Lynn Station was reached at last, and, after three hours' tedious jolting, the combined efforts of the East Anglian and Norfolk Railways deposited the tired excursionists at Norwich.

With highly commendable perseverance and energy, the party re-assembled at nine o'clock in the council-chamber at the Guildhall, where a paper was read on the gates of Norwich, interesting specimens of the protective erections of the thirteenth and fourteenth centuries. The city suffered so much by the rebellion of the barons in the time of John, that it became necessary to surround it with a wall, gates, bulwarks, &c. for its defence. The building of the walls was commenced in 1294, and hence the castle, as a defence of the city, became neglected. A murage, or wall-tax, was levied, and continued for three years, when a patent was passed for another; and various imposts of a similar character were made, until the walls were finished. Eleven of the gates or houses were standing in 1786; but the twelfth had been removed when Blomfield wrote in 1741. Eight of the gates were taken down in 1792, and the remainder in 1808. The Boom, Conisford-gate, Ber-street-gate, Brazen Door, St. Stephen's-gate, St. Giles's-gate, St. Benedict's-gate, Heigham-gate, St. Martin's-gate, St. Augustine's-gate, Magdalen-gate, and Pockthorpe-gate, were fortified places, capable of accommodating several men, and were built evidently for defence, having been of substantial masonry, embattled and crenellated, with machicolations to enable those within to assail whoever might attempt to enter. They had also portcullises, bars, &c. At St. Martin's-gate there were ten battlements; St. Augustine's, twelve; Magdalen, thirteen; Pockthorpe, ten; Conisford, fourteen; Ber-street, twenty-seven; St. Stephen's, thirty-eight; St. Giles's, fifteen; St. Benedict's, sixteen; and Heigham, four. The Boom towers constituted points of control over vessels going up the river. A paper was next read by Mr. Ewing, "On a Carving from Sir John Fastolf's House at Norwich." Mr. W. H. Black made a verbal report of his examination of the documents belonging to the corporation of King's Lynn; and notes having been compared of the day's proceedings, the Association adjourned till Thursday morning.

Here, for the present, we must pause. We have arrived at a central point in the proceedings of the Association, and must defer our notice of the excursions to Great Yarmouth, West Norfolk, and Ely.

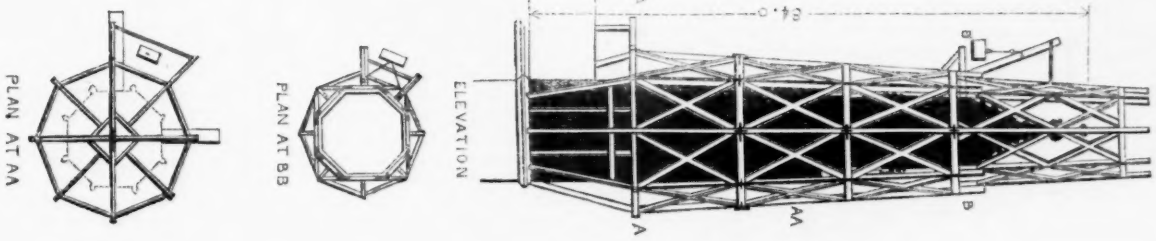
SOME DESCRIPTION OF THE MECHANICAL SCAFFOLDING USED AT THE NEW PALACE AT WESTMINSTER.*

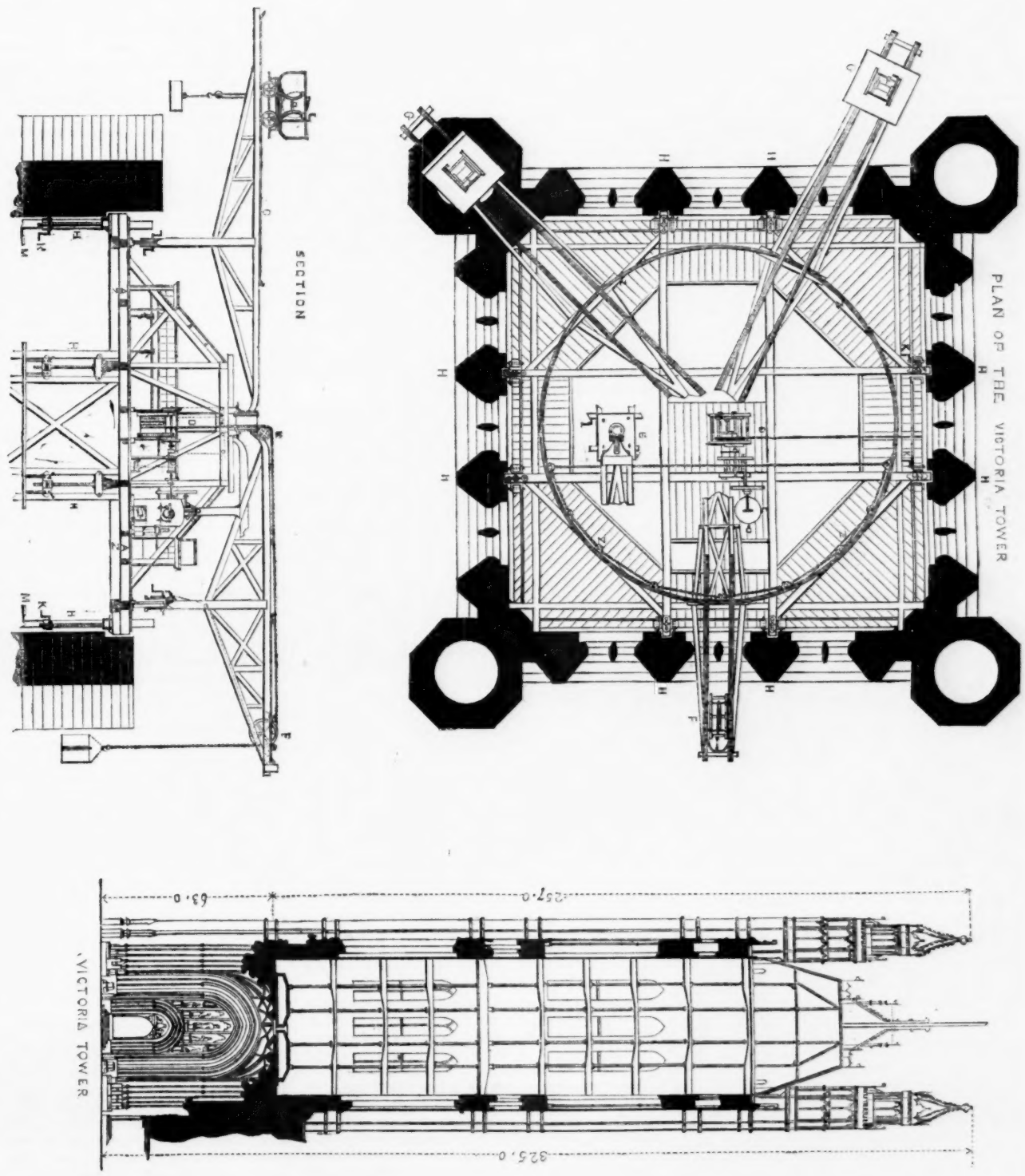
WE now come to the Clock Tower, and I have in the outset to remark, that the principal peculiarity of the scaffolding used in this and in the Victoria Tower is, that it rose with the building, being, if I may so express it, self-raising and self-adjusting. The other great peculiarity of all the tower scaffolds consisted in the employment of steam power to hoist, the steam-engine being placed at the top, and close to its work, instead of at the bottom, where it would generally be fixed. In the erection of the Clock Tower the stone and other materials were raised *inside* from the ground to the summit, so that, there being no appearance externally of a scaffold or other contrivances, the tower seemed to grow, as it were, by some inherent vital power. There is in the interior a shaft, intended to be eventually occupied by the staircase and a lift-machine: advantage was taken of this shaft to raise all the materials by machinery.

Main bearing beams, framed of whole timbers 2 feet 3 inches deep, and 14 inches wide, bolted and strengthened, were stretched across the tower walls from east to west, and on them rails were laid turned up at each extremity. These bearers had points of support on six blocks of cast iron with screws, which could be raised at will, as hereafter described. A secondary frame of timber or traveller moved on the rails just mentioned from east to west, and on this second frame other rails were laid, on which the small travelling crab or jenny, used to set the stone, &c. moved. Means were provided to enable the man in charge of the crab to move it and himself along, with or without a load, by turning a windlass, having a bevel wheel in connection with the axles of the traveller, and similar means enabled him to move also the main traveller mentioned above. Thus every facility was provided for the worked stone being moved to any part of the tower walls *in suspension*, and without handling. A further contrivance was necessary, however, to raise it from the ground. To effect this, two strong queen-trusses, the length of the shaft or chamber above alluded to, and separated as much as its width would allow, were *suspended* to the main bearers by means of wrought-iron bolts 1¾ inch in diameter, passing through the uprights and sill-pieces of the trusses, and through broad cast-iron plates under the sills: 4-inch planking was then laid on the same sill-pieces, having in it an aperture sufficiently large to allow the stone, &c. raised to pass through. Immediately over this aperture, and resting on the head of the trusses, was the pulley F, over which the chain tackling used passed to the ground. A portable steam-engine (Gough's patent) of 2½-horse power was fixed on this platform at one extremity, with a driving band from its fly-wheel to a large drum, H, about 3 feet 6 inches in diameter, at the other side of the platform; and round this drum the chain was coiled and uncoiled. From this description it will be readily seen that worked stone, bricks, sand, water, iron, &c. were raised from the ground up to and through the aperture in the platform. In the case of a block of stone, a small travelling truck, moving on rails laid on each side of the aperture, was run under the block, which would be deposited on it to allow the chain to be free for another descent: meanwhile, the crab first described, having been brought over the block by means of the arrangements already detailed, would lift it and deposit it on the bed prepared for it on the tower walls. The small truck would be run back to allow another stone to be raised through the aperture in the engine platform as before, and the setting would proceed with such rapidity that, to keep one setter at constant work at the top, forty men were constantly preparing stone at the bottom. It has been found in practice that, with an ordinary framed scaffold and traveller, one man will require twenty-five masons preparing stone to keep him supplied, while, as just stated, by the use of the steam-engine, one man required forty to prepare stone for him. What would be the proportion when the old system of poles and ropes is used I have not ascertained, but it would probably prove as far behind the framed scaffold, with the traveller worked by hand, as that is behind the powers of a scaffold where steam power is made use of. It only remains to point out the very simple means of raising the whole of this platform, with its engine, crab, travelling tramways, &c. the weight of which altogether, without any materials upon it, was about sixteen tons.

The main bearers were long enough to bear from wall to wall. At the six points ordinary jack-screws were placed, with solid large blocks of iron at the top and bottom of each, through the latter of which the screw could pass. A nut or collar worked on the screw, having sockets to receive the ends of the iron bars used to screw it up or down, which were used in the same way as capstan bars. Now supposing the main bearers to be resting on the walls, as shown, the jack-screws, having their nuts screwed hard up to their heads, would be put in their places, the walls under these bearings being built up to their under sides. All six screws would then be worked simultaneously, and the whole arrangement, platform, engine, and all, would be raised up at once about 3½ feet, that being the length of the screws. The travellers being then three feet clear of the tower, three feet more of the work all round could be set, and then a fresh lift would take place; though it is obvious that by blocking up the main bearers from the walls, two or more lifts of three feet each could take place before setting the masonry was resumed, when such a course was found in some cases to be more convenient. In this way the whole of the stone work of the Clock Tower was raised and set, and when that was finished, the same power raised the iron frame-work, beams, and plates, of which the

* Continued from page 491.





SCAFFOLDING OF THE VICTORIA TOWER, HOUSES OF PARLIAMENT.

upper part of the roofing is formed; but to fix which, the simple scaffold of poles and ropes, cleverly braced, which still exists, was used.

The cost of the scaffold, with the engine and machinery, may be roughly stated at about 700*l.* It raised about 30 000 cubic feet of stone, about 300 rods of brick-work, besides many tons of iron and other matters. It did all this so quickly and continuously, that there was no excuse for the workmen, either below or above, wasting time; whilst its manifest economy and precision of working need no further illustration. The dimensions of the Clock Tower are as follows:—

External dimensions on plan, average for the whole height, 40 square feet.	
Height to the cornice below the clock	160 ft.
Height thence to the top of the stone-work	51
Height of the metal roof containing the bell-chamber	103
Total height . .	314 ft.

Before quitting the Clock Tower I may advert to the extraordinary reports a short time ago circulated, that it would be necessary to raise the great bell from the outside, by means of a special scaffolding, at the cost of several thousand pounds,—only to say, that of course the subject had not been overlooked as was charitably suggested, but that arrangements had been made from the commencement to enable a bell as large as was considered appropriate to be raised up the central shaft of the tower, and that at this moment all the appliances of tackling, crab, engine, &c. are prepared and waiting for the proper time to arrive, when there is no doubt that the bell will be raised with certainty to its permanent position in a single day.

VICTORIA TOWER.

At the Victoria Tower much the same principle of arrangement, as far as regards the position of the steam-engine and the rising frame-work of the whole, was made use of, though the much larger dimensions of the structure caused some important differences. The internal diameter of the tower is 51 feet, and over to over of the turrets, 70 feet. In the first place, a strong trussed frame, over the whole area of the tower on plan, had to be constructed to carry all the machinery, and sufficiently stiff to bear being raised at once by the screw power without any racking or straining, and consequent disturbance in the position of the apparatus upon it. (See diagrams.) This framing consisted of single balks of timber, 51 feet long, and 14 inches square (very unusual specimens of timber). These beams or sole pieces, AAAA, crossed the area as shown, while similar pieces were placed all round close to the inside surface of the walls: diagonal braces at each corner, ZZ, tied all together on plan, and the four beams crossing the centre of the tower were strongly trussed, both above and below, the latter being necessary to resist the upward strain on the centre should all three travellers be possibly loaded at the same time. That the whole arrangement was thus rendered perfectly rigid and stiff, the experience of constant use for nine years has abundantly proved. A circular cast-iron rail was next laid on the framed platform, while part of the framing was covered with 2½-inch planking, and defended by a hand-rail for the safety of workmen; and on this at C the portable engine of six-horse power was placed, with its drum at D connected by gear work with the driving wheel of the engine. As the lower part of the Victoria Tower, which contains the royal entrance, is groined over with stone at the height of about 63 feet from the ground, the materials for building the upper part could not be raised inside, as at the Clock Tower, and the mode adopted, as shown in the diagram, was the result. An under trussed parallel framing or traveller was formed, moving round a hollow pivot in the centre of the tower E, and extending over and clear of the walls. The king-posts of the under trusses were in fact framed trestles, or coupled shear legs, bolted together and strengthened so as to be perfectly rigid as if in one piece. Each leg of these trestles had grooved wheels at the foot, which ran on the circular iron rail on the main platform first described, thus enabling the whole to radiate round the centre.

A pulley wheel, 4 feet in diameter, was attached to the framing at F, clear of the outside of the tower walls, and a similar one was fixed over the orifice in the hollow centre pivot above referred to: over both of these the chain from the engine drum worked, and raised stone, bricks, sand, &c. from the ground, which were then deposited either on the walls or on the planked platform in the angles, and the chain was set free for another descent. There was also a contrivance, indicated in the diagram, to connect the hoisting traveller, when required, with the engine drum, and to move it and its load round on the circular tram rail to any spot on the top of the tower that might be most convenient for deposit at the moment.

To set the stone so raised, there were two other radiating framings or travellers, G G, formed in like manner, and also moving round the centre by wheels running on the circular tram-rail on the main framing. These travellers were of such a length as to extend to the outside of the angle turrets, and they could each command one-half the area of the tower, working at the same time with the setter to each. On their upper beams rails were placed, on which the crab engine passed to and fro. It will be evident that by this arrangement every portion of the tower walls could be reached, and the stone raised by the hoisting machinery set down in the place prepared for it with the greatest nicety. To raise this huge platform, with its engine, radiating travellers, &c. weighing nearly forty tons, the following means were adopted, which proved perfectly successful to the end of the works. At the points, H H H H, guide and bearing timbers were placed vertically, coupled together with bolt-holes at intervals. These were scarfed and braced together, in heights of 12 feet, as required, and screws very carefully made, 3½ inches in diameter and 6 feet long, with solid head pieces to fit under and grip the timbers of the main platform, were placed between each pair of these guide-posts. By means of a bevel pinion wheel with a winch handle, K, working through a nut at their lower extremity, the large screws could be raised or lowered with ease and certainty, and with them the main platform, the ends of whose timbers rested, as will be seen, on the screw heads. This operation was carried on by lifts of 6 feet each, a man being placed at each screw on the platform. M (which being attached to the nut of the screw, rose as it rose), and all turning simultaneously, the whole mass was raised step by step, as required, up to and above the top of the tower parapet. It should be mentioned, that to provide against any serious accident, from disarrangement of the lifting screws, for instance, slots or chases, 14 inches wide and 9 inches deep, were left in the walls of the tower at the ends of each of the main beams: these were carefully built up in cement as the scaffolding rose, so that the only time any fall could occur would be during the act of screwing up, when of course there would be no materials on the platform to add to the weight, and any such fall, had it occurred, would have been too limited to cause any injury.

No such accident, however, occurred, nor indeed has any happened to derange the machinery during the whole time that it has been in use.

The Victoria Tower scaffold has often had materials on it weighing forty tons, which, added to its own weight, make eighty tons. The Clock Tower scaffold has frequently had to carry thirty tons of materials.

One very severe trial was experienced when the former tower was raised to the height of nearly 200 feet. The workmen, on leaving work, had omitted their usual custom of lashing one of the radiating travellers, to prevent the wind by any chance moving them. A hurricane arose during the night and lasted the following day, and a violent gust acting upon the radiating arms moved them round on the circular rail, and blew them together with terrific violence, as may be supposed, when it is mentioned that they were 50 feet in length. The report of the blow was heard at a great distance, and those engaged on the work fully anticipated that the framing must have been shattered; but when they ventured up to examine, as soon as the wind abated, it was most satisfactory to find that no trace of damage was to be seen, the whole arrangement having proved amply stiff and strong to resist the concussion.

Some calculations as to the cost of labour—the coals for the engine—repairs, &c. to the machinery, may be interesting. They refer to the Victoria Tower, and were the result of observations on a portion of it 60 feet in height.

In this portion there are about 18,800 cubic feet of worked stone set, and about fifty-seven rods of brick-work. Assuming the relative cost of the labour on the stone to be two-thirds of the whole, and that on the brickwork one-third, which supposition is probably nearly correct, it was found that wages and repairs cost, in all, 572*l.* for the period during which the engine worked—equal to forty weeks—and taking two-thirds of this amount, or 496*l.* as applicable to the stone, gives a cost of 6½d. per foot cube, and one-third as applicable to the brickwork, or 76*l.*—a cost per rod of 27s.

This amount does not of course include the first cost of the engine, which has sufficed, not for a height of 60 feet only, but for nearly the whole tower.* And when I state that the cost of this engine and tackling, with the hoisting apparatus, &c. was only about 1,800*l.* and that there are about 117,000 cube feet of stone, 1,350 rods of brickwork, and 1,190 tons of iron in the tower, it will be seen that it is of no moment at all so long as its use materially diminishes the time of labour of the workmen.

The engine required the services of an engineer and an assistant: it was generally worked half a day, or five hours, and consumed in that time about 3 cwt. of coal. It was calculated to raise 4 tons.

The time a stone (the weight immaterial) was in transit from the ground to the top of the tower, when 250 feet high, was 3½ minutes, including its deposit on the platforms above and detachment from the tackling.

All delays and hindrances included, the average number of lifts actually made per hour was ten, though in some cases as many as twelve and thirteen were accomplished.

The box used to contain materials other than stone, such as bricks, mortar, lime, sand, cement, &c. was so contrived that the bottom opened in two halves on releasing a lever handle at the side, so that the contents were at once deposited where required without the delay of emptying by hand.

The foregoing arrangements were continued with complete success in the erection of the Victoria Tower until a height of about 6 feet above the parapet was reached, which was as high as it was considered desirable to raise the engine and platforms. The pinnacles, 85 feet high from the cornice, were constructed by means of a cradling scaffold. The hoisting traveller remained as before, raising all the materials and depositing them on the platform at AA. The setting travellers were shortened so as to move round their pivot *within* the pinnacles, and they were then able to set all the stonework of the parapet between the pinnacles; and they still remain to assist in moving the ironwork, &c. that is yet required for the roof.

The cradle scaffold for the pinnacles deserves some attention, being very daring in its construction, since it is entirely detached from and independent of the mason's work.

Its whole support is derived from a framed skeleton platform at AA, the timbers of which pass through the apertures in the eight sides of the pinnacles. (Diagram No. 10.) They are carefully bolted together, and upheld at each angle by raking struts bearing upon the weathering of the string cornice of the tower. On this framework the braced scaffold was raised, being added to as required up to BB, with horizontal ties at each stage. The plan of the upper one BB shows the mode in which these horizontal courses were braced so as to leave the centre perfectly free for the pinnacle to rise within it.

Up to BB all the stone was raised *within* the pinnacle itself, being run into it on trucks at the level AA, and raised by tackling passing over a pulley at the top of the scaffold and connected with a crab-engine at the base. Above the level BB, however, the pinnacle gathered in, and the stone was consequently raised outside from the platform AA by an ordinary tackle and fall: from this point upwards the scaffold is continued high above the cap stone of the turrets, in order eventually to fix the crowns, with the exception of which and of the roof the shell of the entire tower is now completed. This upper part of the pinnacle scaffold is formed with ordinary poles and ropes, but still keeping intact the principle that it is self-supporting, and in no way resting on or touching the work. The scaffold poles look, indeed, little larger than wires from below; but this is hardly a matter for wonder when it is remembered that from the base of the tower to the top of the vanes is no less than 325 feet.

In concluding these memoranda, which I feel sensible are crude and imperfect, I can only hope that I may have directed the attention of my hearers to a subject which I am confident must be considered of interest to all architects, and very important to those who may be engaged in works of a more than ordinarily extensive and arduous kind.

I think they may also help to prove that architects are equal, when called upon, to devise and carry out works of construction requiring *originality and daring* as successfully as the members of the kindred profession of engineers. And I trust you will agree with me that I am justified in so characterising the works I have been describing.

C. BARRY.

* The steam-engine was not used for the first 85 feet from the ground both of the Victoria and the Clock Towers.

GRAYS THURROCK, ESSEX.

In digging the chalk for lime, at Mr. Meason's, Grays Thurrock, the men occasionally light upon ancient urns and bones, disposed rather curiously. The receptacle is formed somewhat in this way:—A shaft, from 3 to 5 feet in diameter, is sunk down from 30 to 40 feet from the surface, and at the bottom of it branch out, at equal distances apart, three chambers, about 16 feet long, 8 feet wide, and 8 feet high, double cubes, in fact, either purposely or not. In these, urns, broken pottery, and bones (of animals), appear to have been placed, and then earth was thrown down the shaft, and closed up the ends of

the apartments. Some of the pottery is unquestionably Roman, with impressed medallions and architectural ornaments, while other portions of it may be earlier. The marks of fire are evident on some, and one vase, we hear, has been quite recently found there, containing a carbonaceous residuum. The least extravagant supposition is, that the shafts were sunk, and the chambers formed, in early time, simply to obtain chalk, and that being formed, they were used as receptacles. An objector might urge that the chalk could have been obtained with less trouble, and would give other reasons to show at any rate that further examination and inquiry are desirable.

The universal flatness of Essex is so generally believed in, that the noble water-view from Mr. Meason's house, with Gravesend and Rosherville on the other side to the left, comes something like a surprise: the river seen from this point has a lake-like aspect, which increases the beauty of the scene.

Chalk lime is much less used for brickwork than was at one time the case, but for internal work the demand is still great: and a very considerable portion of that demand is supplied from Grays Thurrock. There is a manufactory of whiting in the cutting as a natural accompaniment, whiting being prepared, as most readers will remember, by grinding chalk under a runner, then washing it to remove impurities, and, lastly, drying it in lumps. America, where chalk is not easily to be had, and the love of whitewash is strong, is a good customer to Grays Thurrock.

Bricks were formerly made here in large quantities: and some have said that the term "gray stocks," in its original application, meant stocks from Grays. De Foe, the great novelist, who of all writers made fiction read the most like truth, was a brick and pantile maker here. Up to this time, the latter half of the seventeenth century, tiles had been imported from Holland. In Little Thurrock there are some chambers in the chalk which are called "Cunobelin's Gold Mines;" but De Foe did not find in his chalk anything similar, and became bankrupt, though he ultimately satisfied all to whom he was indebted. Some ornamental moulded bricks of Italian character and superior make, have been found in the neighbourhood, and preserved.

The church at Grays is of old foundation, a Norman door on the north side of the nave, at the west end, remains in its original condition. Two arched recesses on the north side of the chancel, used as aumbries or credence-tables, have semi-circular heads; and the chancel arch, too, and the corresponding arch to the nave beyond the transept, are both of the same character, but have been sadly messed in the restoration which was made here a few years ago. The north transept (in the tower) has Early English openings, and would be very effective if an ugly gallery now in it were removed. The chancel screen, of oak, remains. Externally the stonework has been replaced with *Portland cement!* It is a very good specimen by the way of the material, much better than can be made sure of at the present time, and the forms are creditably kept: nevertheless, as we need scarcely say, the result is very unsatisfactory and disappointing.

About three years ago a Mediæval tile pavement was found just outside the churchyard, and being taken up carefully, now forms the flooring of the Vestry-room: the tiles are plain, but present several combinations. They seem to be much more durable than the modern tiles laid in the chancel, which have changed colour sadly.

There were formerly eight bells here; but, if we are rightly informed, when the old tower fell some 150 years ago, a provident churchwarden sold six of them to a neighbouring parish, where they may still be heard, so that there are only two now at Grays,—the largest and the smallest of the family, who agree but ill in the absence of their connections. An old helmet, hanging in the church, a brass or too, and a piscina of early date, would each afford a text for a dissertation to those who had the wit to preach upon them.

The church at Stifford, St. Mary's, not far from Grays, has several points of interest. The south chapel is Early English, with a triplet, while all the prominent features of the church itself are Decorated. The windows of the latter, including some with square heads, are particularly good. Repair and careful renewing are much needed here, and might be made to produce a charming structure. Above all things, however, let them avoid Portland cement: better a thousand times leave the old work alone, simply removing causes of injury, and applying with careful hand such support as may be absolutely needed. There are two or three brasses and incised stones, of considerable interest, in this church, including amongst the former, one to Ralph Perchehay, circa 1375, "quondam rectoris istius ecclie," with a second of the fifteenth century, representing a priest in a shroud, open at top, with the hands supporting a heart inscribed "Mercy," a rare specimen. The indentations of a scroll round the head and an inscription at the foot of it remain. Amongst the stones is one in memory of a De Tilberry, with an inscription in old French. There is a good piece of fourteenth century woodwork, too, part of the chancel screen: the font is Early English, on five columns: much of the stonework still shows remains of coloured decoration under the whitewash, and the iron ring on the robing-room door, at the west end of the nave, is an elegant piece of workmanship. South Ockendon, and several other churches round about, well deserve a visit, but we must find another morning when the sun shines, and time can be spared, to look at them.

THE POOR BOYS AND GIRLS OF LONDON.

CHRIST'S HOSPITAL.

I HAVE been greatly interested in the paper published in your last number (the *Builder* for the 29th ult.) appealing to the common sense of the people of this vast capital on behalf of its *destitute children*, and repeating some most interesting facts of the last days of the excellent young King Edward VI. My sympathies have been often and deeply awakened on behalf of the class for which your article pleads, and which states facts which every statesman *worthy the name*, and every Christian whose faith is of any real value to himself or to the community, should study, until the means of permanent relief to these young and helpless creatures have been found and *adopted*.

The young monarch of England, in the sixteenth century, exhibited his talents for public business in the midst of the pitiless attacks of a life-destroying disease; and showed his *matured* wisdom on the verge of the close of a life of *sixteen years*, in a manner which might tinge with shame the cheeks of many rulers and their prime ministers that have lived beyond *sixty*. He was about to leave his earthly kingdom, and he distinguished and dignified his departure by an act of mercy to the suffering and neglected children of his metropolis. He made an *immediate* provision for their rescue from destitution and vice. Alas! no other sovereign has followed this noble example; and the establishment of the admirable Edward himself has been diverted, by a gradual growth of selfishness, from its original application to the necessities of the poor, and is wholly usurped by the classes *far* above that for whom it was so *royally* intended and endowed!

We should speak with abhorrence of such a succession of robberies, if they were committed in any other capital in the world. We should denounce the people, as we have done the American repudiators of their just debts, but we have no word of rebuke for the hereditary defrauders of the poor boys of London. The Royal Estate, settled on them by the Sixth, the last, and the *best* Edward, has passed into other families, and is employed to educate the sons of those, the majority of whom can well afford to pay for their instruction. If this abuse must, from its long existence, be perpetuated—if it has the unquestionable *germ* of an immortal nature in its constitution, then we must feel the inutility of endeavouring to destroy it. It must go on to the end of time, a *perverted* establishment,—redeemed, indeed, by a few eminent names from the charge of educational inefficiency; but altogether unavailable for the relief of the children whose best interests were contemplated by its youthful and kingly founder. So let it be, indeed, if *another* be now, *and at once* erected, for the class which the royal youth desired to rescue from ignorance and degradation; and let *another Edward* consecrate his name to England by a similar foundation—by another seminary for the destitute boyhood of London, which shall *not* be perverted. That *now* prospective Edward has large estates as Duke of Cornwall, and thence continually increasing wealth. By *thus* employing a comparatively small proportion of it, he would secure his future reign from many anxieties, which it will never be in the power of statesmen to obviate by penal statutes, or any other coercive means. Men will not be frightened into permanent good behaviour: they must be *trained* in it—and they cannot be so in the garrets and dens of this vast Babylon. If vigorous measures be not now used for the infusion of a right spirit into the rising race of the poor, in fifteen or twenty years from this period, the sovereign and statesmen of England, whoever they may then be, will have an increased difficulty in preventing outbreak and insurrection. If no attachment to the throne is systematically taught—and on a religious basis—to the myriads which will continue to congregate in London, those myriads will seek to overthrow it in their blind contempt of an authority which insures to them individually no social blessing, no refuge from misery in childhood, no instruction or counsel to their youth. I do not lose sight of the excellent things which are done by private charity, but these are not equal to meet the exigencies of the case, and, unless a State provision is made for destitute childhood, accumulated evils *to the State* will arise from the deficiency.

I now turn to the condition of the little girls of this vast city, who, in so many hundreds of families of the poor, are sent to gain their living by beggary: what is to be done for them? for parish and union workhouses *do not seem* to meet their case. I would venture to propose similar establishments in every district of London, for the rescue of these unhappy creatures, exposed to all the miseries of hunger, cold, and nakedness, and the manifold temptations superinduced by the ordinary necessities of our common nature. In numberless instances they are sent out by sick or widowed mothers, or elder sisters, to entreat alms. The most benevolent know not what to do between the fear of encouraging a dissolute mother, or an idle son, in thus destroying the moral feelings of her children, and the fear that they by refusal shall increase real distress, and induce desperation.

There are some, indeed, who profess never to give alms to street beggars; but, for my own part, I could never understand the humanity which resisted every plea for relief, let the appearance of the supplicant, or their tale of misery, be what it might. If there were a refuge for destitute children in every district in which they would be instructed *usefully*, and brought up *honestly*, I believe the cost of our prisons would be materially diminished, and the expense of *convict ships* an item much less onerous in our national expenditure. The *Princess Royal* is about to leave us for another land, in which she will, no doubt, have an opportunity of contrasting the means of relief for the indigent with those of her own country. A Christian lady tourist* and her husband, some years since received high gratification from the sight of the children of a Royal school for the poor entertained in the gardens of his Prussian Majesty. Such a sight in this country would be unique. Can we not nationally manifest our respect for the Prussian alliance by founding in Her Royal Highness's name a school for the destitute FEMALE CHILDREN of Westminster, in the neighbourhood of her Royal mother's palace, to be a perpetual memorial of the interest, devoted and affectionate, which the people take in Her Royal Highness's happiness? Would not the Dean and Chapter contribute of Westminster Abbey wealth to such an object, and thus rescue their locality from the appearance of that embryo vice and that squalid wretchedness in the infant denizens of the ancient city, which disgraces in all eyes their stately cathedral? The contribution of 2s. only per annum, from one million of persons in London, would raise 10,000*l.* a year. This income, at a sacrifice felt by few or none of those in circumstances to contribute to it, would provide decent maintenance, religious education, and useful training to hundreds of human beings, who *must* otherwise grow up polluted and debased, condemned to vice and penury here, and in peril of interminable misery hereafter. S. E. M.

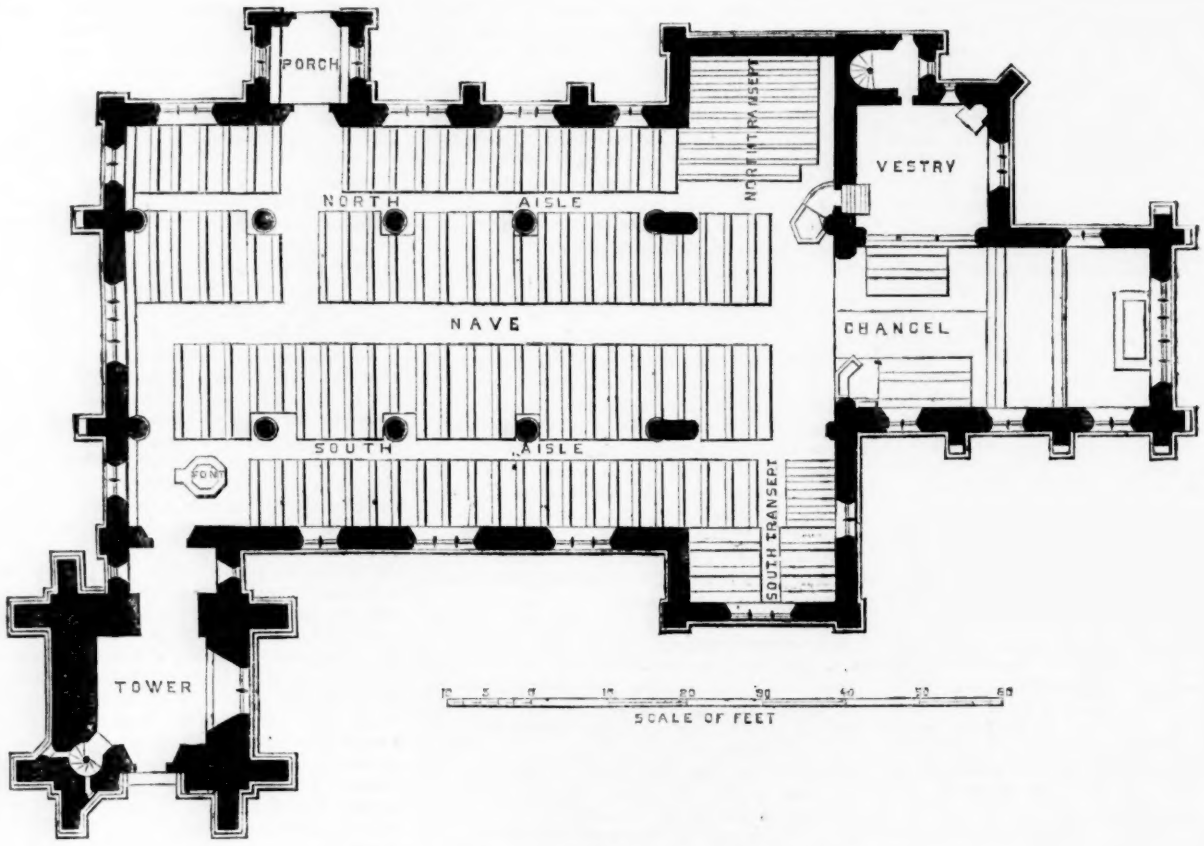
* Mrs. Sherman. The Rev. Mr. Sherman, the husband of this lady, was the successor of the late Rev. Rowland Hill, of the Octagon Chapel, Blackfriars. Their reception at the Prussian Court is described in the journal of Mrs. Sherman, introduced into the memoir written by her husband.

THE MARYLEBONE FREE LIBRARY.

THIS unfortunate library was, I believe, closed in July last, not so much to the disgrace of the public, nor of those benevolent rich who supported it, and would, if judiciously canvassed, have no doubt helped still more, but from, I fear, mismanagement by the working committee and officers. I, in common with many others, took a great interest in its welfare, and, as far as my humble means went, assisted both by many books and also money. I have seen no account of any public meeting, preparatory to winding it up, or any financial statement, which the public were surely entitled to. It looks as if some jobbery were connected with the matter. The *Builder* seemed to take an interest in the library, and I therefore write to it for any particulars that it may be able to give as to the disposal of the books, &c.; or perhaps some of its readers can furnish this. CLAN CHATTAN.

THE LATE MR. TINKLER, ARCHITECT.

OBITUARY.—We have to deplore the loss of a member of the architectural profession, Mr. T. C. Tinkler, who, after a long and painful illness, has finished a young and struggling life. We knew him to be a most persevering, amiable, and honourable man; and at the moment he was getting into a good position, illness, which had been brought on by too much devotion to business, swallowed up his means; and, dying at last, he has left a young wife and two children, with nothing to depend upon but the aid of those who knew him. To assist in getting up a subscription in their behalf, several gentlemen have volunteered their assistance; and we shall be glad to receive the subscriptions of those who may wish to do to others as they would be done by. Some of our readers will recollect his published sketches in Rome.



PLAN OF ST. MARK'S CHURCH, WREXHAM.

DIRECT RAILWAY COMMUNICATION BETWEEN ENGLAND AND INDIA.

SOME time ago we published a letter addressed by Mr. W. H. Villiers Sankey to the Earl of Clarendon on this subject. Deplorable circumstances have since occurred to render more apparent the necessity for connecting our possessions in the East more closely with the seat of Government at home, and Mr. Sankey has forwarded another communication to the Secretary for Foreign Affairs, pointing out the advantages that would have resulted if the line were now in existence. "In a political point of view," he goes on to say, "such a line would be of the greatest importance, because it would diminish, as it were, the distance of India from our shores, and it would then be as easy for us to protect it as it is now to defend our West Indian and Canadian possessions. We need never fear its being invaded by sea; and, in the event of the railroad I propose being constructed, we could always get there at least as soon as our enemies, so that we should no longer have to fear either foreign aggression or internal commotion.

The commercial considerations of my proposed route, however, are worthy of the deepest study, and are of the highest importance. I need hardly remind your Lordship that Venice, with 30,000 sailors and 3,000 commercial ships, was in the zenith of her glory as long as she could profit by the Indian commerce through the Red Sea; and that Genoa enjoyed her reign of power and magnificence during the time that she traded with the East through the Black Sea and by Constantinople; that the Portuguese bore away the *prestige* and the solid advantages from both these republics so soon as she could monopolize that trade by the discovery of the passage round the Cape; and we ourselves commenced our era of commercial greatness by availing ourselves of that facilitated communication. Again, Russia, when she established the Tiflis route, raised Odessa, in a very few years, from a miserable fishing village to one of the most important commercial places in the south of Europe; and when, jealous of strangers trading by that route, she issued, in 1831, an imperial ukase, prohibiting the carriage of goods by foreigners between Odessa and Redout Kali, which communicated with Tiflis, where France had already established a consul, a *portion* of that commerce was then obliged to follow another route, and the consequent sudden increase of business at Trebizonde, in a remarkably short space of time, was quite surprising, for in 1832 exports from that place amounted to only 300,000*l.* while in 1836 they had increased to 1,760,000*l.* Imports, in like manner, which in 1834 were only 440,000*l.* in two years afterwards, viz. in 1836, amounted already to the sum of 1,720,000*l.*

Again, when the Red Sea route was re-established by England, the number of letters transmitted between England and our Indian empire was more than doubled by the shortening of the journey; for the year before the change, only 300,000 were despatched, while in the following year, owing to what is called the 'Overland Mail,' 680,842 letters were transmitted, and goods would go the same way were it not for the expense, and constant necessity of changing of conveyance, which is always alternating between land and water. Still gold and silver, and precious stones, follow the shorter route as it is, notwithstanding the disadvantages and inconveniences they have to contend with.

Should, however, the railroad I propose be executed, effecting *a thorough land communication all the way from England to India*, our commerce would increase to an extent unknown in the world's history, and nothing then could interfere with our East Indian dominions. If, however, the British Government does not establish that communication, other nations most assuredly will. * * *

In 1814, when the East India Company's monopoly was in existence, the sum total of merchandize leaving the shores of Great Britain for the account of the company amounted to 1,874,000*l.*: when these privileges were partially removed, the exports increased to 3,495,300*l.*; and in 1841, when that monopoly was entirely taken away, they increased to 5,600,576*l.*"

IMPROVEMENT IN STREET LAMPS.

No one would suppose that there was much room for artistic effect in the mere painting of a street lamp-post, but if the column and framework of the lamp are painted red, and the post a bronze ground colour, they have a very handsome, but by no means gaudy appearance. Some painted in this manner may be seen at West-hill, Highgate.

Another variety would be to paint the base of the post black, the post itself stone colour, and the column a very pale blue. Almost anything would be better than the dirty white with which they are periodically daubed.

The effect of an improvement may be seen upon a small scale at West-hill: if extended generally throughout the metropolis, it would produce a more remarkable change for the better in the appearance of the streets than can at present be imagined, especially in straight thoroughfares like Portland-place, Pall-mall, and others. The increase in the cost would be very trifling, as all common pigments are much about the same price. H. W. COOKE.

ST. MARK'S CHURCH, WREXHAM.

IN the middle of last year the works connected with the erection of this church were commenced.

The edifice is situated at the entrance of the town of Wrexham from the railway station, and it consists, as will be seen by the ground-plan, of a nave, 88 feet 6 inches long, by 23 feet 4 inches wide, and 65 feet to the ridge of the roof; north and south aisles, each 70 feet 6 inches long, by 11 feet 1 inch wide; north and south transepts, each 18 feet by 20 feet, and 50 feet to the ridge; and chancel, 37 feet long, by 19 feet 6 inches wide, and 52 feet to the ridge of roof.

On the north side of, and separated from the chancel by a wood screen, is the vestry, 15 feet by 16 feet, over which the organ-chamber is constructed.

The tower, which is 26 feet square at the base, and when complete, including the spire, will be upwards of 200 feet high, stands at the south-west angle of the nave. Through this, and a porch on the north side of the building, are the two principal entrances into the church.

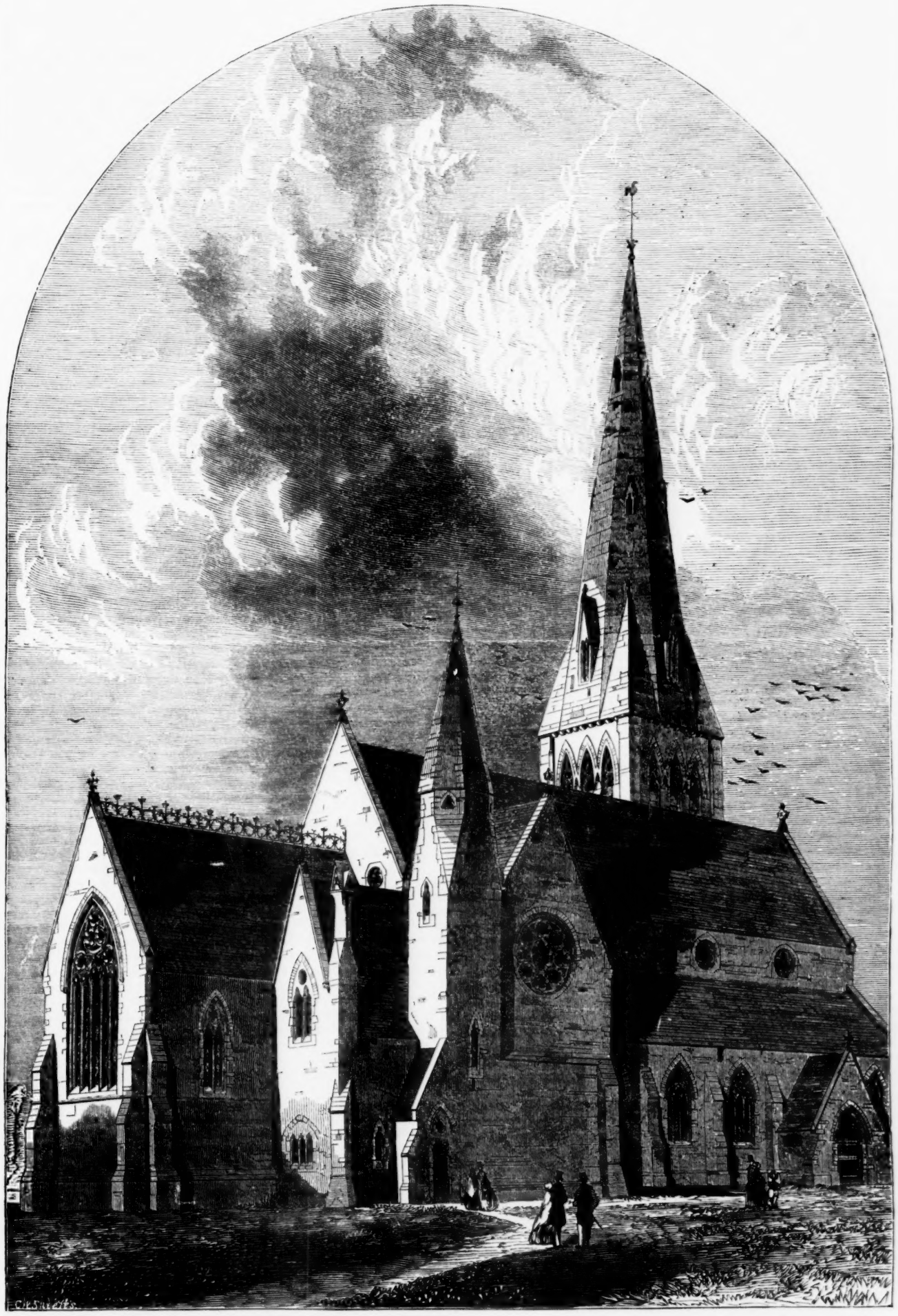
All the walls are executed in coursed rubble of Cefn stone, with Bath stone dressings. The piers which support the nave arches are executed in Cefn stone, with moulded caps and bases.

The whole of the roofs are formed of Memel fir timber, open to the ridge, and plastered between the rafters, thus leaving all the timbers exposed to view, and are covered with Staffordshire tiles. The chancel roof is decorated with a lofty ornamental metal ridge. The timbers of the roof, and all the internal and external woodwork, is to be stained a light oak colour. The pulpit will be executed in Bath stone. The floors are to be laid with black and red Staffordshire tiles.

The style of the building throughout is the Decorated.

The works are progressing under the superintendence of the architect, Mr. R. Kyrke Penson, of Swansea, and at the close of next spring, or the commencement of the summer, the whole will be completed.

The contract was taken by Mr. Ebenezer Thomas, of Menai-bridge. The entire cost will be about 6,000*l.* and the church will be capable of accommodating upwards of 800 persons.



ST. MARK'S CHURCH, WREXHAM.—MR. R. KYRKE PENSON, ARCHITECT.

RAILROAD BRIDGES.

IN public works, now so numerous in the metropolis, it is lamentable to see how little regard has been had to the architectural effect of those which are the most palpable and obtrusive, *the railway viaducts that traverse our causeways*. It is bad enough that imperious necessity demands for public convenience the foreclosure of all prospect, and the barring out of the breeze; but it is unnecessarily galling when an open causeway is intercepted by a frowning and deformed mass of *purposely misshapen* brickwork.

Railways are, in the initiative, mere matters of speculation: they are subscribed to by individuals anxious to make money; contracted for by professionals tolerably sure to do so; and carried out by officials, commonly not regardless of profits: therefore, beyond the solidity of structure and durability of plant and material, no attention is devoted to them; nor does the appearance or effect of massive erections receive the smallest regard from any one concerned.

In extensive ranges of arches at high elevations, it is impossible to avoid some symmetry of form: the Roman aqueducts, of which three yet remain, extending across the Campagna, each exceeding 20 miles in length, and visible until the line is lost in a thread: even these, though erected for durability only, seem relieved to the eye in the sequence of arches: many portions of them are necessarily very lofty, and they show, like the long viaduct of the Southampton Railway, a grace in their very simplicity; for in the arch there is an inherent beauty that can only be marred by heaping together shapeless masses of superstructure.

However potent the Romans were in great public works, they were certainly far in arrear of modern engineers; but they did know how to erect magnificent buildings, and how to ornament their Eternal City; in what way to make the waters tributary to public use, in beautiful fountains, which flowed ceaselessly, and poured health and enjoyment upon the populace.

With all our advances in science, in the rapid application of the railroad system to the uses of a great population, it is strange that, in the construction of viaducts across the metropolitan causeways, no attention has been given to ornamentation, nor even to symmetrical finish.

In all quarters of the town and city they cross the main thoroughfares: in Camden-town alone there are four within pistol-shot range: they are the best erections of the kind extant; and yet how shapeless they are; how pleasing they might be!

The massiveness of a bridge does not preclude the idea of ornamentation: on the contrary, great extent of outline, if proportionately designed in a style of simplicity, would increase the effect. A candlestick, after the model of the York or Nelson Columns, would look mean: the pillar towering to 150 feet wears nobility in its extent. Much more so of a bridge: the simplicity of its parts, the boldness of its outlines, recommend simplicity, rather than traceries, or *alti* or *bassi relievi*. The like may be predicated of temples: an enormous building cumbered with sculptures, minute in comparison with its great proportions, looks after all like a Persian garment, which relies more upon the pattern emblazoned in gold than on the winning grace of flowing drapery.

It would appear, therefore, to be impossible (*as to exteriors*) to combine together great extent of dimension and grandeur of proportion with the unity of a striking outline, if *overloaded* with ornamentation.

All this has little to do with railway bridges; still it shows that little is required beyond a few columns, a cornice, a balustrade, a well-defined pilaster, to give effect and apparent lightness to the most massive and ponderous work; but in a city just now emerging from the slough of habitual utilitarianism in domestic architecture, it is deplorable that public works should be run through without any respect to finish or *public decency*.

Look at the Fenchurch-street Station, crossing Crutched-friars: there, just at the point of junction with John-street and Cooper's-row, where it diverges into triple thoroughfares, an arch (for it is an arch below) sustains a mass of dull shapeless wall, some 30 feet high: the arch springs from the *first-floor street line*—the superstructure towers over the houses and stores! True, there are on this side three blanks representing windows, 20 feet high! There is a cornice supported by trusses, run like dentils along the line; but the fabric has the most oppressive aspect: on approaching nearer it is more of a tunnel, 36 feet wide by 120 feet long; and on the reverse side, towards John-street, a totally different style of structure presents itself, for here the *paries* is all of sheet-iron, and the ornamentation consists of laps in the same material, representing styles, which are bolted together, as are the sections of a steam-boiler, by clout-headed nails, in the fashion tinkers love.

In passing this Strait, it is impossible to forbear the remark, that the metropolitan magnates might take a lesson from the railway directors, and strike a line of street from Fenchurch-street to the Mint; or else in a line from Cannon-street (across Trinity-square) towards the great Commercial-road. This would (*by a short cut of only a quarter of a mile*) give a direct easement from St. Paul's to the East.

But this is only a word by the way: we must speak of the bridge as we pass it: having gone over the simpler, and therefore less obnoxious castings of the northern metropolitan viaducts, it is not requisite to particularise beyond one more of these *chefs-d'œuvre*—it is the viaduct over the Marsh-road, Lambeth. Like its eastern relative, this "*Arc de Triomphe*" traverses the route askew, at an angle of twenty-five, or thereabouts. As all the world of London (even the *beau monde* of Belgravia on the Epsom day) passes that line, it is unnecessary to describe its obese proportions, much less so to give a daguerreotype sketch of its pictorial perfections. All know its aspect, and with the recollections of these two examples, we would appeal to civil engineers and the architects who co-operate with them in building for all time, whether it would not be more patriotic, more grateful to themselves, more conservative of the record of their exploits, and certainly more creditable to the country, if they were to expend only a little more labour in design upon works that obtrude themselves upon the noble, and the merchant, and the tradesman, and the stranger within the city bounds. If the example of high talent and taste elevates the genius of our generation, so also such specimens as are cited are standing memorials of Gothism, and "our sin is ever before us." What has been done is irremediable, and stands as a record of bad taste to all posterity: what remains to be done, which will be on a larger scale, such as the intended railroad-bridge across the Thames at Chelsea, and the Fleet Valley viaduct, should have artistical attention.

THE MARBLE PRODUCING DISTRICT IN ITALY.

IN your No. 758, page 467, I observe an article calling the public attention to the "Carrara Marble Works," which are certainly an interesting subject to builders, sculptors, and architects. Whilst a well-merited eulogium is passed on the exertions of Mr. William Walton, for improving the marble trade in these districts, by the introduction of approved machinery, I cannot admit the correctness of the statement reflecting that Carrara and its vicinity have hitherto been unconscious of "the improvements of the age." I must also deny that the sawings mills are little better than "a few huts," and although the appliances of 300 years ago, in the shape of machinery still exist, they are a curiosity very partially in use, as the generality of such mills possess excellent machinery, and from four to twelve frames, on the exact same principle as those now erecting by Mr. Walton, who has only enlarged upon models of minor capacity, introducing such innovations as all machinery admits of. At Carrara, and its vicinity, there are many other important modern sawing-mills, such as Fabbricotti's, Beato Tognio, LA GORA, Ponte Bugia, Sarteschi's, Binelli's, &c. &c. besides Mr. Walton's new building; and on the Massa side of the duchy, marble sawing-mills, with all the latest meliorations in machinery, are numerous and commonplace; whilst the "huts," I may say, are the *raræ aves*. Hence, it is evident that the commencement of the era is not altogether attributable to the "monster mill of twenty-eight frames;" neither can I admit your informant's statement, that the water-power in Modena, is applied in a "gimcrack and rude mode," as I am able to prove that some of the finest contrivances, both for mill and irrigation purposes, are to be seen in that duchy, and that the energy of many minds has brought them into effective existence, regardless both of party jealousies, and of State duties. With the exception of a handful of rich proprietors, there are but few quarry-owners; indeed, the populations of the Carrara and Massa districts are composed of a hard-working and industrious people, caring little or nothing whether the modern or the ancient appliances are the agency for facilitating their labour: they are, however, very intelligent and quick at appreciating the advantages of novel introductions, and equally so in doffing all things old, when the opportunity offers. The Italian Marble Company's extensive quarries are on the Massa side of the duchy, and that company is also erecting a sawing-mill (on the Trigido), which bids fair to compete in size, and in all the recent improvements, with any similar establishment. The building is 152 feet long, and 50 feet wide, constructed much as described by your correspondent, but adapted for a lesser number of frames. It has, however, the great advantage of full water power all the year round, which renders its twelve frames equivalent to sixteen. Most of the mills at Carrara and neighbourhood, are compelled to stop work partially, if not altogether, during the four summer months, for want of motive power. The Italian Marble Company, I am informed, does not meet with any of the jealousy, or animosity, alluded to, either from the people of the country, or from its competing neighbours; and nothing has as yet impeded its new works from fast progressing towards completion; thanks, however, to the perseverance of all parties concerned, and to the facilities offered by the Government of Modena, which is determined to encourage every enterprise calculated to better the condition of the working classes. MARMO.

THE VOICES OF OLD BUILDINGS.

IT may be noticed that the stubborn oak, the willow, and other varieties of trees, the bending reeds and waving corn, have each their peculiar and well-known voice. The sea also has its grand and varied sounds, and the rivers have many murmurings and musical notes, the memory of which is just now pleasant.

Those voices are not, however, confined to natural objects, for old buildings, the work of men's hands, have also their peculiar and, by many, well-remembered sounds. Few of our old churches are silent. In damp and uncongenial weather, the continual dripping the whistling winds through doors and windows, and the heavy flapping of tattered scutcheons and such-like matters, sound like a melancholy complaint, which the ticking of the clock and the whir and bang of the hour striking, in some measure relieve. When, however, after dismal days, the sunshine pours in amongst the tombs and carved work, the sounds become more lively, and the superstitious might feel alarmed at the loud and mysterious cracks which may be heard in the organ-lofts, and amongst the ancient pews and panels. It is pleasant at such times to hear the fluttering of some small bird from window to window, and the cooing of pigeons in the belfry. The variety of the tones of the old church clocks is noticeable, and it is often amusing to hear the desperate attempts of the machinery before the chimes are struck. We like to listen to those musical notes from such towers as Chepstow, spreading early in the morning over the picturesque country. The pealing organ and choirs of some of our cathedrals come sweetly upon the ear, heard over a river, and amongst the rocks and woods. Each church has its peculiar sounds and remarkable echoes, which seem to wander to the lofty roof and to remote places.

Old halls and mansions have also voices of their own, which come solemnly along galleries and staircases. When those places have fallen to ruin, they still have their characteristic voices, and we know of no sound which is more impressive than the slight but constant dropping noise of small fragments—a voice which seems eloquently to tell us of the frail and perishable nature of the work of man's hands.

THE WELLINGTON MONUMENT COMPETITION.

THE late exhibition of models for the Wellington monument suggests some ideas whether such competitions are essential for the purpose required, and whether they could be conducted upon regulations less wearisome and expensive to artists.

As a sculptor, and not mixing or approving of competitions, I may say a few words. Half the sculptors in London have not competed, and among foreigners we have only a few who have forwarded designs—and why is this? From transactions in former competitions and distrust in the present. Mr. Cockerell writes upon the incompetency of the judges; and Mr. John Bell believes they decided exclusive of interest—but Mr. Cockerell applauds such competitions as glorious affairs, and liberal rewards. It is the sport of many for the gain of a few. There is not a design that would answer the purpose. I would suggest that artists should be invited to send sketches of designs, which any professional can do in a few hours, or to do the same at a place appointed, that it may be their own work, and then a number should be selected by competent judges, and a commission given with proportionate reward for a quarter size model. That would give a greater encouragement to art, and prevent much disappointment and expensive failures. We should not see such abortive models, making a scar to the profession, and bringing it into ridicule. It would prevent that trading spirit in art, speculating with the aid of gold with the abilities and brains of others: we should not see a man set up by a "coincidence queer," to the disparagement of his professional brethren. What I propose is a continental plan, and should wish to see it adopted in our competitions, giving the poor and able man a chance, and not to weary these out, that others of better means may gain the golden prize. "An Amateur" calls upon sculptors to speak out of the injustice of reward. I did conclude in my own mind that the simple design would claim attention; but simplicity of design should have grandeur of conception; it should not

fail in mechanical arrangement and twofold design. That which is not the high element of design they reward with the two first premiums; and they give a fourth premium to a model that it is difficult to discover any point of merit in; and 100*l.* to a model displaying the best figure modelling in the collection, and well deserving, though indifferent in design; and another (though they state that models that have exceeded dimensions have been excluded) to one that would not go under the arch, and is totally unfit in design, or with any merit in its conception, no more than many that could be selected from old prints. These are the awards that one says are decided from incompetence in judges; and another, "exclusive of interest." I think they have much the flavour of both. Let artists refrain from such competitions, unless conducted upon a better system, and not from whim and fancy. They may reckon upon the true knowledge of art they have gained, and direct their efforts accordingly, and they would not then feel aggrieved by the indifferent gaining the ultimate commission. MODELLING STICK.

PROVINCIAL NEWS.

Chatham. — The new public hall, on the site of Chatham market, approaches completion. It is 60 feet long by 40 feet wide, and 25 feet high, with arched roof, and is ventilated from the roof, and illuminated from the centre by a "sun-light." There is a gallery on each side, running the entire length of the building, also one across the entrance, and a platform at the opposite extremity, with a concave recess. The galleries and roof are supported by iron pilasters. The hall is calculated to contain 850 persons seated, or about 1,100 standing, and has retiring rooms, library, &c. It will probably be opened for public purposes early in the ensuing October.

Godalming. — The foundation-stone of the new schools at Farncombe has been laid.

Stourbridge.—Tenders have been received for the erection of a block of offices in the High-street, Stourbridge, as follows:—

1. Freeman	£953
Parapet ornaments	15
2. Pagett	870
Parapet ornaments	10
3. Scott	837
Parapet ornaments	13

No. 2 includes laying on water from mains.

Saltash.—The preparations for the launching of the tube of the Saltash bridge, in connection with the Cornwall Railway, having been completed, it was floated into position on Tuesday last. Mr. Brunel floated the first tube for the Cornish side. Captain Claxton, who had charge of the floating of the Menai and Conway bridges, superintended everything afloat. 500 men were employed, and more than two miles of large hawsers used.

Ellesmere.—The contract for building the new lock-up house at Ellesmere has been taken by Messrs. Jenks and Cartwright, and will be commenced immediately. The new building will be erected at the entrance of the town from the Wrexham-road. It will front the east, and will be built of brick, with stone facings.

Liverpool.—The new landing-stage at Liverpool, for sea-going steamers, is now nearly completed. Sir William Cubitt was to inspect the stage preparatory to its being handed over to the corporation by the contractors.

Preston.—The chief stone of the new schools projected by the Wesleyan Methodist Association body in this town has been laid in "The Orchard." The site is a plot of land behind the present chapel, in Liverpool-road. It is intended, also, according to the *Guardian*, to rebuild the chapel; but as school accommodation is the more urgently required, it was determined to apply the funds already raised to the erection of buildings to be used as day and Sunday schools. The site of the schools occupies an area of 699 7-10 square yards, of which 369 yards are occupied by the school-house and premises, and the remainder by playgrounds. The buildings are to be constructed of brick, with stone dressings, and will comprise a school-room, 70 feet long, 30 feet wide, and 24 feet high, and class-rooms, 17 feet 6 inches long, and 14 feet wide, capable of accommodating 337 children. The style of architecture is Gothic, of the Early English period. The principal front will be 102 feet in length, divided into five compartments, the middle and ends projecting beyond the faces of the other work, and terminating in high pitched gables, the centre being crowned with a bell turret: the windows are all of stone, dressed, and comprise triplet and couplet lights, the former being ranged in the projecting and the latter in the reading compartments. The couplet lights rise above the eaves and the main roof, and are gabled. The principal entrance is in the centre compartment. The separate entrances for boys and girls are from Liverpool-street, and face the play-grounds. The interior of the buildings will be fitted up on the national plan. The roof will be an open timbered one. The buildings have been designed by Mr. T. W. Carter, of this town, architect, and are estimated to cost, after including 450*l.* for site and sundries, the sum of 1,500*l.* The contractors for the several branches of work are Mr. James Williams, bricklayer; Mr. William Yates, mason; Mr. R. B. Huntington, flagger and slater; Mr. W. Pye, joiner; Mr. James Blake, plasterer; Mr. James Walmsley, plumber; and Messrs. Clark and Charnley, ironfounders.

Gateshead.—A public fountain has been erected in High-street, Gateshead, at the expense of the corporation.

Shields.—A public fountain is to be erected in the market-place, South Shields, according to the *Newcastle Courant*.

Forres. — A monument is to be erected on the Castle-hill here to the memory of Dr. Thomson, of Cromarty, who died from over-exertion in the Crimea, after the battle of the Alma. The foundation of the monument, according to the *Forres Gazette*, is a base of about 24 feet square, and its height will be about 60 feet. The site is the west side of the hill, in the direct line of High-street, from which, as well as from every direction westward, it will form a conspicuous object. Mr. Urquhart, Elgin, is the contractor for the materials. A number of large blocks of freestone are on the ground.

CHURCH-BUILDING NEWS.

Watford.—St. Andrew's Church, Watford, was consecrated on the 21st ult. The prevailing style of the architecture is Early English. The edifice covers an area of 87 feet in length by 40 feet in breadth. The walls are chiefly of flint, with white stone dressings. The roof of the nave, which is 38 feet in height, is covered with ornamental tiles, with stone crosses at the east and west gables, and an ornamental cross distinguishing the nave from the chancel. The tower is 81 feet in height, and it is intended to add a vane which will raise it to 90. The belfry contains eight windows, two in each face of the tower. The spiral roof of the tower is covered with ornamental lead. The exterior of the church is ornamented with some carving in stone of heads and foliage. The nave has a high-pitched open roof, with circular ribs and spandrils—the ribs being stained deal, and the spaces between white. The east window has tracery in the upper part. The west window is of a similar character, but not so large. Between the nave and the north aisle there are five arches. The chancel is entered through a large heavily-moulded arch, showing three half-columns. The seats are all open, and are of stained deal with crimson cushions: fifty-one of them are numbered, and will seat about 300 persons: the rest, affording accommodation for 150 more, are free seats. The edifice stands on the western side of Church-road. It was commenced, according to the *Hertford Mercury*, about three or four years since: the works were suspended in February 1855, and resumed in March of the present year. The structure is now complete, excepting the spire. The architect is Mr. Teulon, and the builders are Messrs. Fassnidge and Son, of Uxbridge. The works have been carried on under the general superintendence of Mr. Hamilton.

Quedgley.—The parish church of this quiet little village has been re-opened, after having been nearly rebuilt upon the old foundations, except the tower, and with an additional aisle for the accommodation of increased population. This work has been accomplished by the exertions of Mr. Curtis Hayward, the squire of the parish, and the Rev. Erskine Knollys, the incumbent. The edifice will contain about 250 persons. It consists of a nave, two side-aisles, and a chancel. The old pillars and arches on the south side remain. The chancel is fitted up with plain oak choir stalls. A painted window represents the Crucifixion and the Resurrection. The seats are all open, of oak.

Caundle Marsh, Dorset.—Saint Peter's Church, recently consecrated by the Bishop of Salisbury, is of plain but substantial appearance, and in the Early Decorated style of the fourteenth century. The building is erected of the local stone, with window and other dressings, of Hamdon-hill stone; the roofs and benches of red pine, stained. The north porch and external doors are of oak, with ornamental wrought ironwork. The pulpit is of oak, on a stone base, and the reading-desk, also of oak, is supported by wrought-iron brackets, resting on a dwarf stone screen, dividing the nave from the chancel. The roofs are covered with parti-coloured tiles, and the internal paving is also of red and black tiles, from the Poole potteries. A painted eastern window, designed by the architect, and executed by Lavers, was presented by Robert Willmott, esq. of Sherborne. The centre light gives a representation of the Crucifixion, the side lights show appropriate geometrical patterns and devices, inclosing armorial bearings and monograms. The trefoil in window-head is filled with a symbol of the Holy Trinity. An old church, very much dilapidated, was taken down to make room for the present new building, and all old remains and other objects of interest have been carefully preserved, and built into the present church. Accommodation is afforded for seventy worshippers. This building was erected at the stipulated price of 464*l.* in a very creditable manner, by Mr. Shewbrooks, of Taunton, under the direction of the architect, Mr. R. H. Shout, of Yeovil.

Wolverhampton.—It is proposed to erect a church and schools at Blackenhall. The population of St. John's parish alone amounts to 11,000 or 12,000, and at present there is only one church, capable of accommodating 1,660 persons. Church accommodation is to provided for 4,000. A committee has been formed to carry out the object, and at the recommendation of the bishop, 500*l.* have been granted from the Hodson Memorial Fund. An endowment of 1,500*l.* has been offered, and several sums have been promised to the building fund. About 3,000*l.* will be required to complete the endowment fund, in addition to aid expected from the Church Building Societies.

Edgbaston.—The restoration and decoration of the Edgbaston parish church, which were commenced last year, are now completed, and the edifice has been re-opened. The walls of the interior have been painted a warm colour, the ceilings of the nave and south aisle coloured blue, and the cornice of the nave and the reredos (which was exceedingly plain) have been decorated. Mr. F. W. Fiddian was the architect employed, Mr. Whitworth the decorator, and Mr. Hardwick the contractor, in the carrying out of the improvements.

Loughborough.—The ground appropriated for the cemetery consists of between seven and eight acres, and is situated on an eminence nearly a mile from the town. The lodge is executed in red brick, with Bath stone dressings. Passing through the gates, up the centre drive towards the chapel, on the right is the ground appropriated for the Established Church; on the left the unconsecrated part, with a portion for the Roman Catholics at the further end of the drive. The main building is placed near the centre of the whole grounds, and consists of two chapels, with vestries and a groined cloister, serving to connect the two, and form one building; the compartments at each end of the cloister forming porches to each chapel. The chapel walls are faced with blue Claypole stone, and Bath stone dressings. They are in the Geometrical Decorated style—both chapels being alike externally and internally. The internal fittings are of oak. The architects were Messrs. Bellamy and Hardy, of Lincoln. The contractor for the building was Mr. John Sudbury; the stone-work being executed by Messrs. Walpole and Roberts; and for the iron-work and fencing, Messrs. S. Frisby and Son, all of Loughborough. Mr. J. Savill was clerk of the works. The consecration by the bishop took place on the 25th ult.

Chesterfield.—The consecration of the Chesterfield and Tapton Cemetery was performed on the 26th ult. by the Bishop of Lichfield. The cemetery buildings consist of two chapels, each 34 feet by 17 feet, and a lodge, appropriated as residence for the registrar, and a board-room for holding the meetings of the burial-board. The whole cost has been about 3,500*l.* The architects were Messrs. Bidlake and Lovatt; and the contractors Messrs. Coates and Burrowes of Chesterfield.

Salterhebble (Halifax).—The foundation-stone of the new church now in process of erection for the Salterhebble district, was laid by Mr. W. I. Holdsworth, on the 26th ult. The church is named All Saints, and was designed by Messrs. Mallinson and Healey. The site is a field on the right of the road from Skircoat-green to Salterhebble. The style is Early Decorated, and the church will be nearly a cross-church, having nave, side aisles, transepts, and chancel, but having the tower and spire over the north transept. The masons are Messrs. Helm and Co.; Mr. Bedforth being the carpenter; Messrs. Bancroft and Son, plasterers, Mr. Walsh, plumber and glazier; and Mr. Maude, painter.

South Shields.—The foundation-stone of the new church about to be erected in Mile-end-road, South Shields, by the United Presbyterian congregation of Heugh-street Chapel, under the superintendence of Mr. Thomas Oliver, jun. of Sunderland, architect, was laid on the 26th ult. The building, which will comprise church, school-room, and vestry, is designed in the Gothic style of architecture. The church is cruciform on plan, with nave, aisles, and transepts, and a tower with spire at the south-east angle, with deacon's vestry below. There will be no galleries, but provision will be made in case they are required afterwards. The church on the ground-floor will have 500 sittings. The entire cost, including ground, &c. will be about 2,000*l.*: of this the sum of 750*l.* has been subscribed by a few of the members. The

entrance to the church will be in Ingham-street, by a deeply-recessed porch, with carved capital and arch-mould. The end windows are each four lights, and are to be filled with stained glass. The nave columns will be of iron, and the arches above, which support the roof, of wood, filled with ornamental iron tracery. The whole of the woodwork will be stained as well as the roof, which is to be open timber work, some portions of which will be carved. The iron will be represented as such, but painted in appropriate colours, and otherwise ornamented and moulded.

THE METROPOLITAN SEWERS.

THE other day at Whitechapel three strong men were stricken to death by the poisonous pent-up gases of a sewer, and two more, in trying to save them, nearly shared the same fate.

This is a tangible example of the dangerous nature of the London drainage; and it would be well to remember that poison, more or less adulterated, exists in all improperly drained and ill-ventilated places. This accident, and some other circumstances which have from time to time come to notice, show that great difficulty will be found in ventilating the huge sewers which are now necessary in the metropolis. People who appreciate the value of good drainage have also a strong dislike to gully-holes and other vents: now, it must be evident that as these vents are complained of, and one after the other shut up, those left open must emit larger quantities of gases of a more powerful description. Something must be done to remedy this, or our many miles of drainage will become as dangerous to explore or open as the worst of long-closed coal-mines. The entire closing of the gully-holes, and the proper ventilation of the sewers, also the means by which the gases may be raised up shafts harmless, are not impossible in this scientific age.

The extent of the London sewerage is weekly increasing, and as each cesspool is closed, and new houses with proper drainage built, so much more is Father Thames rendered unwholesome. This is a circumstance unpleasant to us of the present generation, but which will be beneficial in times to come; for the necessity for improvement will cause proportionate exertions to be made. It is necessary, however, that what is done in connection with London drainage should be effectual, and that we should not entail continual expenses for half measures, but we must — to use a common expression—"take the bull by the horns," and convey the drainage to such a distance from London as will prevent any inconvenience to the coast, and that, too, in close sewers, and not in the monstrous open cuttings recommended by the referees. The plan to accompany their report we may say, by the way, is not yet publishsd.

A RAMBLE AMONGST THE METROPOLITAN TOMBS AND MONUMENTS.

FAMILY and friendly love, national gratitude, and that less worthy feeling, the love of pomp and display, have been the means of raising in this metropolis specimens of men's design and handiwork which, in some instances, cause feelings of satisfaction, and in others, those of disappointment and vexation. Notwithstanding artistic deficiencies, there is, however, much interest in a journey amongst the records which have been placed in our churches and other buildings to the memory of departed worthies.

With the exception of those in Westminster Abbey, we have, unfortunately, but few examples in London of the more ancient style of monument, and the chief of these are to the memory of Gower, the poet, in St. Saviour's, Southwark; Rahere, in St. Bartholomew's the Great; and the Duke of Exeter, removed from St. Katherine's-by-the-Tower to the new chapel in the Regent's-park. In some of the churches which escaped the Great Fire are monuments older than that event, but few before the date of the reign of James I. In St. Helen's, Bishopsgate-street, is a very fine altar tomb, on which are recumbent effigies of Sir John Crosby and his lady: there are other monuments here worthy of attention. In the church at St. Mary Axe is the life-like bust of honest John Stowe, seated at his desk, with pen in hand, in a circular-headed niche, surrounded by hour-glasses and other emblems. In St. Giles's, Cripplegate, the monument of Fox, the author of the "Book of Martyrs," and some other old bits within the altar-rails are worthy of notice. Below the present church of St. James, Clerkenwell, in the crypt, surrounded by stacks of coffins, are fragments of the tombs formerly in the original building. In old St. Pancras, notwithstanding the restoration, the old monuments have been retained: here and there the careful wanderer may trace some pieces of incised stone, or mutilated brasses. In the church of All Hallows, Barking; Stepney, and a few other places, there are some remains. Of all the stately tombs which once adorned the cathedral of old St. Paul's, only a few fire-marked stones remain in the crypt below; and all the memorials in the great mass of the City churches met with destruction at the same time.

Perhaps the oldest monument at present remaining in the metropolis, if we except the Roman, Saxon, and one or two Danish relics, which have from time to time been turned up, is the stone which contains the rudely-sculptured figure of an ancient abbot of Westminster, and which is still remaining in the south cloister of the Abbey, and is probably as old as the middle of the eleventh century. For a considerable length of time, the decoration of English tombs chiefly consisted of crosses and other emblems, and rude inscriptions. As a further amount of sculptural skill began to be generally developed, the emblems gave place to figures of the deceased, which were made, as nearly as the rude artists could do so, to imitate the form and costume of the person in whose memory the tombs were raised.

As architecture advanced in England, the marked improvement of the effigies of the departed is strikingly shown by an examination of the monuments, in Westminster Abbey, which date from the reign of Henry III. to the beginning of the seventeenth century; and one feels, when looking at the figures of the kings, queens, and others, in this venerable church, that they are correct portraits of those who have here crumbled into dust; and it is evident that the chief aim has been to make the effigies the most prominent and lasting part of the tomb. Take, for instance, the tomb of Queen Eleanor: canopy and sculptured base have perished and decayed, but the lovely figure of the queen still remains. In like manner the effigy of Henry V. if it had met with no wilful destroyer, would have been preserved. The statues of the other kings and queens are also examples which show that a chief object of the monuments was to exhibit and preserve the life-shape of the persons commemorated. In the monuments of the best period of Mediæval art, the accessories are sumptuous, and well in keeping with the surrounding architecture, but they neither destroy the principal object, nor detract from the beauty of the building in which they are placed.

It has been remarked that the devotional feeling shown in the monuments of this date is too much overlooked at present, and that in memorials placed by the living to the dead we should sink the display of the actions of the man or woman upon earth, and strive to show the weakness of humanity, and make it the chief aim of our tombs to acknowledge the greatness of divine power, and show our sense of humility. The grave itself, and the instinct which causes us to rear those comparatively frail aids to memory, are a sufficient acknowledgment of our position; and it may be remarked that in the Middle-age tombs of both stone, bronze, and brass, although the figures are arranged in the attitude of prayer, the pomp of heraldry is not neglected, thus strangely mingling together the vanities of the world with more solemn thoughts.

The chief aim of monumental sculpture, however, is to show forth in as clear a manner as can be devised those men and women who, by the divine gift of genius of different descriptions, have conferred benefit upon their country or on the world at large, and that their portraits should be aided by such accessories as will show the nature of their various labours, and put them for many ages before the general view as objects not only of respect and gratitude, but also of emulation.

Having glanced thus slightly at the ancient monuments in Westminster Abbey, we will, without just now noticing the more modern marbles there, ramble to St. Paul's, our other great metropolitan church, and there will be found ample matter for contemplation. The building itself, in its vast and glorious proportions, is liable to make us critical of the accessories which are introduced; and although we enter below the dome with an anxious wish to find beauties instead of faults, we are obliged to give more censure than praise.

And first, taking a general view, it must be acknowledged that the immense sums of money which have been expended in sculpture here have not greatly improved the general effect of the building. There are no principal groups of statuary such as Michel-angelo would have designed, and which would, like the Middle-age monuments, have incorporated themselves with the architectural form; but the memorials, taken in the mass, are puny and inconsiderable, and not at all in harmony with the genius which designed the building into which they have been received. Let us, however, walk round the place, and stop before the monument of John Howard, the philanthropist, who is in Roman costume, trampling on fetters, and bearing in his right hand a key, and in his left a roll, on which are inscribed the words,—"Plan for the Improvement of Prisons and Hospitals." In front of the pedestal is a design in basso-relievo, of a figure distributing food and clothing in a prison. With the exception of the Roman costume, this would have been a creditable monument. The Romans did not represent their great characters in Greek costume, neither did the Greeks clothe their heroes in the garments of the Egyptians.

In comparing the monuments in St. Paul's with the more ancient examples in Westminster, we cannot fail to notice that, while the latter have much dignity and repose, they are destitute of any great amount of invention; and that the former show, notwithstanding the failures, an intellectual straining after something, which may eventually produce good results. A few of the monuments in St. Paul's are remarkable for the fitness of the inscriptions: for instance, to a monument to Lieut.-col. Sir W. Myers, Bart. who fell in the battle of Albuera, which is not in other ways particular, great interest is given by the careful quotation of part of a letter to the mother of the young warrior from the Duke of Wellington, which is engraved on the base:—

"It will be some satisfaction to you to know that your son fell in the action, in which, if possible, the British troops surpassed all their former deeds, and at the head of the fusilier brigade, to which a great part of the final success of the day may be attributed. As an officer, he had already been highly distinguished; and if Providence had prolonged his life, he promised to become one of the brightest ornaments of his profession and an honour to his country."

In another instance, on the monument erected at the cost of the nation to the memory of Major-gen. J. Dundas, the resolution of the House of Commons, which specifies the particulars of his services, is engraved at length.

But few of the monuments in St. Paul's Cathedral display any great amount of poetical conception, but amongst those worthy of remark for this quality we may notice that by Westmacott, to the memory of Admiral Lord Collingwood. In this work, the body of the naval hero is represented lying on the deck of a man-of-war, shrouded in colours won from the enemy, and with his hands clasping a sword upon his breast: a figure of Fame kneels over the prow, and the remainder of the composition consists of a figure of "Father Thames," attended by emblematical figures of other British rivers. On the gunwale of the vessel there are basso-relievo illustrations of the progress of navigation: the first shows the uncertainty of navigation when mariners had only the stars for a guide; the second, the introduction of the compass; and the third, the forging of instruments of war.

In the monument to General Moore, figures of Valour and Victory are lowering the general into a grave with entwined laurel, while an allegorical figure of Spain plants the standard of conquest over his grave.

It is less pleasant in other works to notice the slightly altered repetition of the same idea,—Britannia mourning, Britannia decking a sarcophagus, Fame consoling Britannia, &c. &c.

In the memorial to Sir William Ponsonby, whose death was caused by the weakness of his horse, which broke down under him in a charge, the horse is shown falling languidly to the earth, whilst, as the guide-book says, "his master, *a figure without drapery*, in the foreground, is kneeling in a constrained posture in the act of receiving a wreath of laurel at the moment of death from the hands of Victory." The excuse the artist of this design had for placing the warrior before us without drapery it is difficult to conceive.

In wandering amongst the memorials, all must feel the difficulty there is in making the allegory sufficiently distinct to the multitude.

In the monument to the memory of Captain John Cooke, "Britannia is represented [as we are told] mourning; and consoled by one of her children presenting her with her trident, and another her helmet; while in the background is the prow of a vessel, to indicate that the work is a naval monument."

In the memorial to Lord Duncan, the pedestal represents in *alto-relievo* a seaman with his wife and child, designed to commemorate the regard this celebrated officer had for those who sailed under him. The greater number who view this representation are not sufficiently acquainted with the history of Lord Duncan to be able to know the reference these figures have to an amiable point of his character: it should therefore have been mentioned along with his distinguished naval services, and the great victory which he gained over the Dutch fleet.

In many of the monuments in St. Paul's Cathedral there is a great want shown of a harmonious combination of the chief figure with what should be the accessories. The famous Marquis of Cornwallis, in robes of a Knight of the Garter, stands on a pedestal: at the base is a figure of Britannia, with spear and shield, in a stiff, unmeaning attitude; and on the other side are figures which are

intended to represent the Ganges and another river of the East. In taking a round of modern St. Paul's, it will strike many that in monumental works, which are intended for the use of the multitude, allegory should not be too much refined, and that it is always better to convey an idea in a distinct form, even by the assistance of letters, rather than to leave it in doubt. It is useless to waste labour, space, and marble in figures, the intention of which it is difficult to understand.

In Flaxman's memorial to Lord Nelson, although the pedestal is not exactly to our taste, it is applied to a useful purpose, for on one part are cut, in bold letters, the names of his three greatest victories—Copenhagen, Nile, and Trafalgar; and below that are representations of the North Sea, German Ocean, the Nile, and Mediterranean: and every one will appreciate the feeling which designed the fine figure of Britannia, with one arm partly encircling two sailor-boys, and the other pointing with admiration to Nelson, who is dressed in the uniform he wore at the time of his death, with the exception of a cloak, which he received as a present from the Sultan. AN ARTIST.

INSPECTION OF LONDON DWELLINGS.

WE regret that, notwithstanding the able advocacy of the Earl of Shaftesbury and others well acquainted with the subject, the Bill which was lately brought into Parliament to give increased powers to the inspectors of dwellings should have been rejected. The necessity for such a measure has not been sufficiently appreciated.

No one can be more ready to advocate the just claims of the poor than ourselves, or to respect the opinion that an Englishman's house should be his castle: it is, however, necessary, for the salvation of the lives of those placed in certain positions, to interfere firmly, though wisely and kindly. Such interiors as those we have described in the Sand-yard, Clerkenwell; Gray's-inn-lane, and other places which still exist, wherein several families are huddled together, are "castles" not only dangerous to those who occupy them, but also to those living around. Since power was given to the police to examine public lodging-houses, we have seen something of their operation: we have seldom heard them complained of; and while we know the good which has been effected through it in various districts, it has been found that the law was not sufficient to reach many overcrowded rooms, in which from fifteen to twenty men, women, and children, of different ages, were at times collected together. Few, we think, who have observed such a condition of things, will advocate the continuance of arrangements which surely lead to immorality and crime, besides the loss of health and life.

The inspection of dwellings is a very delicate matter to deal with, but we are assured that something must be done. We have lately made further inquiry in the neighbourhood of Clipstone-street and other districts, and feel certain that the overcrowding of the houses is increasing, approaching to a certain extent to the same condition as the dwellings which have been removed. It is true that the drainage is an advantage in some places, but the houses, both as regards general arrangement and ventilation, are unfit for the reception of numerous families. In some of those houses which consist of twelve rooms, including the garrets and kitchens, we found distinct families in each room, and some rooms were occupied by even more than one. We put down the numbers given to us as occupying the rooms in one house—1, 2, 6, 8, 7, 8, 9, 6, 2, 5, 4, 2—60. Many of these houses are roomy, and have once been places of some consideration, but the persons who let them in tenements have made no provision of extra closets, sinks, &c. such as is made in the houses which have been altered by the societies for improving dwellings. The staircases are closed at the top, and there are no arrangements for obtaining a circulation of air. The atmosphere of some of these staircases was very bad, and the supply of water quite inadequate for so many people. It is vexatious to find hardworking men preferring such habitations to the excellent arrangements of the model buildings. In parts of Islington and elsewhere, the numbers who occupy some of the houses which are let in tenements are surprising. In a row of small six-roomed houses we found in one three families, who consisted of twenty-four persons; in another there were four families, whose numbers were seventeen; in another there were also four families, or eighteen people, and so on.

It must be evident to all that these thick populations require very great care, and we think that those houses which are systematically sublet should be placed under certain, though not too stringent, regulations. The buildings ought, in the first place, to be adapted as far as possible to the wants of the numerous tenants; and it has been suggested that the subletter of premises should be held responsible for the number of persons he receives, and that this might be managed without any particular system of examination, if the landlord of each house were made liable to a fine for receiving more tenants than the space would give healthy room to. Those who felt aggrieved by the overcrowding might give information. We must confess that the subject is beset with difficulties, chiefly caused by prejudices and ignorance which ought by this time to have been overcome. The evil is evident, but the remedy has not yet been found.

ELECTRO-TELEGRAPHIC PROGRESS.

THE East-India Company, we hear, have agreed to pay 20,000*l.* a year to the Indian Telegraph Company from the date of the first message, and till the line yields an annual profit of 6 per cent. The concurrence of Government, however, is a requisite.——The Mediterranean telegraph is about to be laid, the line being now on its way in the *Elbe*. It is 150 miles long, and is to be sunk between Cagliari, on the Sardinian coast, and Bona, on the coast of Algeria, whence it will be connected with Alexandria by a subterranean line along the coast.——Mr. Lindsay, of Dundee, in the *Northern Warder*, reminds the public of some curious experiments of his at Portsmouth and elsewhere, in the formation of marine telegraphs without any transmarine or submarine wires except on each of the coasts so connected. In respect to the Atlantic telegraph, he says,—"One plate or sheet of copper might be immersed in the ocean at Lizard Point in Cornwall, and another at the north-west part of Scotland, connected with the former by a wire and its telegraphs. Here the *lateral* distance is about 500 miles, and between the parallels of 50 and 59 degrees. Nearly opposite to these are the north-east point of Labrador, and some part of Nova Scotia. The lateral distance being 500 miles would be *a fourth* part of the cross distance, which is nearly 2,000 miles, but as much electricity would pass as would move the needle without an excessive battery. By this method the expense would not be a tenth part, perhaps not a hundredth part, of that by the cable, and the charge for messages would be proportionally smaller. Cases may, however, occur, when lateral distance cannot be got, that a cable is necessary,"—the Atlantic line, however, not being one of these! The experiment at Portsmouth, so far as we recollect, was indeed a remarkable one, but the idea of an Atlantic line without any Atlantic wire is scarcely conceivable. Is Mr. Lindsay, by the way, aware of the existence of the following passage in a letter written by Dr. Franklin to Peter Collinson, of London?—"Spirits at the same time are to be fired by a spark sent from side to side through the river, without any other conductor than the water, an experiment which we some time since performed to the amazement of the navy." The countenance of a Franklin in favour of his very startling idea ought not to be lost sight of, but perhaps Franklin's meaning was not exactly what his words would seem to imply.

FOREIGN INTELLIGENCE.

The Restoration of the Cologne Cathedral, and the Cölner Domblatt.—On the relation which the latter journal bears to the restoration of that huge Mediæval building, M. *Reichensperger*, Prussian M.P., makes the following remarks:—"We find here a complete series of the periodical reports of the directing *master* (the cathedral architect), and the minutes of the meetings of the open committee, who have conducted this huge work at such a trifling cost. We see here how stone, as it were, was put to stone, to make a grand and perfect whole; the very history of every portion of the construction is here rolled up before us; and all the doubts, impediments, and difficulties are faithfully recorded, as well as the wise and well-considered means by which we succeeded in removing them. It has become clear that, the cathedral being the result of *so many* endeavours and restorations,—it was by no means easy to tread again, as it were, in the footsteps of those old masters. The social organism in which they had lived had been rent asunder, their systems and rules had vanished from memory; art and workmanship had become separated, and had taken diverse, even opposite directions,—all which was to be re-organized, or at least to be newly arranged. But that *school* which has now *arisen* at the foot of the cathedral, has *more* than a local signification. Leaving even out of the question that the Cologne Cathedral is a European monument, towards which the eyes of architects and amateurs are directed, this restoration forms a turning point in the history of (German) architecture, and its collateral arts. For proving this, we only have to look at the many ecclesiastical buildings erected of late in the Rhinelands, as well as the great restorations of historical buildings carried on in Aix la Chapelle, Coblentz, Neuss, &c. Nay, we may fearlessly assume, that the great renovation processes going on now in the cathedrals of Strasburg, Speyer, Mayence, Frankfort, Ulm, Worms, Vienna, &c. have had all their common source and origin in our *fatherlandish* Cologne Dom.—Civil architecture also has taken the cue from our doings, and a better taste, far distant from psendo-antique, or academic eclecticism has taken hold of the mind of architects; while our *open* committees have given a death blow to red tapeism, aristocratic art-bureaucracy, and the similar banes under which other huge constructions are labouring at the present time."

Bucharest in 1857.—The following sketch of the Moldavian capital may be of some interest just at the present time:—The first exterior aspect which Bucharest presents to the tourist is quite specific, as its houses and gardens, its places and streets, and its population, partake both of the Oriental and somewhat the Italian character. There is much difficulty to arrange into anything like order those planlessly aggregated streets, some dark, others with more light, crooked or straight; mostly disagreeable by either mud or excessive clouds of dust, the latter constantly stirred by herds of all sorts of domesticated animals. The houses surrounded by gardens or empty spaces, offer a picture of most glaring contrasts. Still, here also (as in most half-civilised countries), the original type of building is obviously derived from the Wallachian *clay hut*, specimens of which are yet to be seen in some of the outskirts of the city. Next to them come the small, one-storied houses, which, being a compound of brick and wood, are inhabited by the inferior classes of the population. From these to the few, even palace-looking dwellings of the rich, are several intermediate gradations. The interiors of the dwellings of the *Bojars* are literally crammed with the most costly furniture, the finest tapestry, the most splendid glass and China ware. Nothing is deficient in a Wallachian noble's house—but the mind or higher aims, which may import some life and movement to these exteriors of present social life.

FOOT-LIGHTS—COVENT-GARDEN THEATRE.

I PRESUME it is intended that in the new Covent-garden Theatre every improvement will be adopted which can add to scenic effect. Let me recommend the abolition, or rather modification, of those hideous objects—foot-lights. What occupant of pit or stall has not often felt annoyed that he could only see the heads of the actors (when half-way down the stage) over or between these unshapely obstacles, which, though sometimes 18 inches high, barely shelter his eye from the flaring, smoky glare of the gas Argands, and which form a harsh foreground which would mar the effect of the best pictorial group or stage scene ever produced.

You must, of course, have a foot-light,* but why not have a thin, close, continuous, and bright line of jets an inch apart, and shaded from the audience by one shallow rim running in an unbroken line along the whole front, and which need not be more than four or five inches above the level of the stage? It might be an improvement, too, to keep the grimaces and contortions of the orchestra a little out of sight.

A. C.

SALTS ON WALLS AND DAMP IN WALLS.

AN "Old Subscriber" complains of this old and oft-complained-of grievance, and asks for a remedy, or rather a preventive. Various articles on this subject have appeared in our pages. Thus, on 14th July, 1855, will be found some remarks by Mr. C. H. Smith, in a communication to the Commissioners on the Fine Arts. In this communication, Mr. Smith remarks that "it is sulphate of magnesia (common Epsom salt) which is occasionally found to cover the surface of newly-built walls with an efflorescence like hoar frost." He explains how such salts are frequently produced in walls, or gain access to them, as through the sand, water, lime, or brick-clay entering into their composition; but he considers that "under ordinary circumstances it is scarcely possible to get rid of the various saline or deliquescent substances that have once been admitted into the walls of a building." We may, however, refer for further information on the subject to Mr. Smith's communication itself.

On 30th June, 1855, "An Analytical Chemist" (Mr. Wentworth Scott) writes us to the effect that correspondents in asking how to get rid of this evil ought to ascertain and describe the precise species of salts complained of, but offers his aid if a little of the salt be forwarded to him. "Meantime," he says, "I may as well give the process I have found quite effectual in the few instances of the kind that have come under my notice:—Take 4 lbs. commercial car-

* Reflectors from above might be substituted, as suggested in the *Builder* nine or ten years since, on a plan previously put in practice, and with complete success.

bonate of soda (natron), 2½ lbs. commercial carbonate of potash (pearlash), and 2½ lbs. of finely sifted silver sand: mix intimately, and put into a crucible (iron is best, if not Hessian) capable of containing three times the quantity, and fuse for two or three hours: pour out upon a stone or iron slab, and allow it to cool: then boil in about one gallon of water, until a saturated solution is obtained. Let the salt be scraped off the wall as much as possible and washed well with warm water; then brush the hot solution prepared as above on all parts of its surface: give the wall another coat in three days' time, and, at the end of a week or two, *the wall will be covered with an impervious glassy coating*, which will, I think, attain the desired object. *If applied to damp walls they cease to be so.* It will also prevent the white rubbing off."

Other communications by the same writer afterwards appeared in our columns, as on page 557 of the same volume; and, if we mistake not, the Crystal Palace Company were indebted to Mr. Scott for removing the saline disfigurement on brick walls at the palace.

IRON TRADE OF SOUTH STAFFORDSHIRE.

IRON GIRDERS.

THE iron trade of South Staffordshire may be set down as in a condition which is an improvement upon its state for the past five weeks. The advices from the United States have imparted to it a measure of soundness which, until this week, it has not in the time mentioned possessed. From across the Atlantic the news received as to the nature of the orders to be sent thence justifies the conclusion that several houses, largely engaged in the American trade, and which have considerable influence in the iron market at home, will not be lacking orders up to a period beyond quarter-day next.

There seems less likelihood now than there was a fortnight ago that, in so far as the long-established houses are concerned, a reduction of prices will be declared for the next quarter. Some of these, however, before the improvement in the American advices, were accepting rates for sizes and descriptions of which they had only a few, if any, orders in hand, which has further illustrated the fact that the determinations of the quarterly meetings are not to be classed with the laws of the Medes and the Persians.

In the midst of this state of things, it seems surprising to many that so little should be doing in the pig trade in the way of sales. At Birmingham yesterday (Thursday), and at Wolverhampton the day before, the majority of the persons on 'Change were stockbrokers and commission-agents, all ready to sell pig-iron at rates which are certainly not a fair profit upon the article, in the present price of the raw material and labour. Some few transactions were effected at 4*l.* for pigs, that, to have realized their maker a profit at all proportionate with the profit of the maker of malleable iron, should have obtained at least 5s. more. Most of the finished iron-makers, who order largely at quarter-day, have not yet had all the orders of last quarter-day supplied to them, but in about a fortnight they will have, and then pig sellers will be admitted to an interview. Another reason for the apparent dulness of the pig trade is the large increase in the make of that article now as compared with even twelve months ago. Stocks of pigs have slightly increased in the past fortnight.

A further proof of the desirability of substituting wrought for cast iron in the construction of girders in ordinary buildings, has been afforded in the history of the accident in this district of recent date. A week or two ago, it will be remembered, a portion of an upper flooring at the screw manufactory of Messrs. Grice, Weston, and Co. of Spon-lane, on the Stour Valley Line, fell in consequence of the breaking of a cast-iron girder which supported it, occasioning damage to the amount of 500*l.* and killing a workwoman.

At the inquest Mr. Nicholls, the architect, stated that the girders had been proved before they were put up, and were sufficiently strong to carry twenty-two tons breaking weight, whilst the weight upon it, at the time of the accident, was only about fifteen or sixteen tons. The newspaper report of the inquest upon the girl, concludes thus:—

"The coroner suggested to Mr. Grice, in the event of their re-building the warehouse, the propriety of their having oak beams, supported by iron columns, instead of cast-iron girders, which suggestion Mr. Grice promised to see carried out!!"

"The coroner," it is right to say, was on this occasion a deputy coroner, a young man from Devonshire, evidently with very little faith in iron. The coroner would, no doubt, have called in such scientific aid as would have accounted for the accident, and not have left the jury to decide upon the testimony of the architect, who "could not in any way account for the fall."

PROBLEMATA MATHEMATICA.

FIND the dimensions of the largest cistern that can be lined with a given rectangular sheet of lead, by soldering it only at the four angles formed by the intersections of the sides and ends of the cistern.

Let a and b denote respectively the length and width of the given sheet of lead, and let x be taken to represent the depth of the required cistern. Then the four pieces cut from the corners of the given sheet will be equal squares, having their sides equal to x, the depth of the cistern, and leaving the dimensions $a-2x$ and $b-2x$ for the length and width of the cistern. Its three dimensions will therefore be expressed by $a-2x$, $b-2x$, and x (1); and its capacity by $(a-2x)(b-2x)x$.

$$\text{Let } u = \phi(x) = (a-2x)(b-2x)x = ab x - 2(a+b)x^2 + 4x^3;$$

then we have to determine that value of x which makes u a maximum. Hence, by differentiation,

$$\frac{du}{dx} = ab - 4(a+b)x + 12x^2 = 0;$$

$$12x^2 - 4(a+b)x = -ab;$$

$$\text{and } x = \frac{a+b \pm \sqrt{(a+b)^2 - 3ab}}{6} = \frac{a+b \pm \sqrt{a^2 - ab + b^2}}{6}.$$

Upon examination it will be found that $\frac{d^2u}{dx^2}$ is negative when we take the lower sign in the value of x; therefore u is a maximum for the root

$$\frac{a+b-\sqrt{a^2-ab+b^2}}{6}.$$

Hence, by substituting for x in (1) its value

$$\frac{a+b-\sqrt{a^2-ab+b^2}}{6},$$

we have the quantities,

$$a - \tfrac{1}{3}(a+b-\sqrt{a^2-ab+b^2}),$$

$$b - \tfrac{1}{3}(a+b-\sqrt{a^2-ab+b^2}),$$

and

$$\frac{a+b-\sqrt{a^2-ab+b^2}}{6},$$

which are the required dimensions of the cistern.

A plane reflector, of given length, is placed with one end of it touching the base of a vertical object, and turned about this end, as its axis, until the extremity of the reflection of the object would meet a vertical line passing through an extreme point in its opposite end; to determine the height of the object.

Let $á$ = the given length of the reflector, and let a be the angle of inclination of the plane of the reflector with that of the object; then the angles of incidence and reflection $= \frac{\pi}{2} - a$; the angle which the reflection of the object makes with the reflecting surface, on the side opposite to that of the incidence of the object, $= \frac{\pi}{2} - \left(\frac{\pi}{2} - a\right) = a$; the angle which the vertical line would make with the same side of the reflecting surface $= a$ (Euc. i. 29); the angle which the vertical line would make with the reflection of the object $= \pi - 2a$ (Euc. i. 32); and the farthest extremity of the real object and that of the reflected object will be equidistant from the reflecting surface, and on opposite sides of it (Griffin's Optics, 20).

Hence the height of the object = the length of the reflection $= á \frac{\text{sin. } a}{\text{sin. } (\pi - 2a)}$.

Cambridge. A. J. TOMPKINS.

BUCKINGHAM PALACE.

WHEN I see in your Journal the grand displays of architectural skill shown in the design of the intended Public Offices, I look with wonder and a sort of admiration at the pinnacles, turrets, and long lines of elevations, decorated in various tastes, and having all some peculiar merits; but none of which, in my humble opinion, are equal to the visionary idea I had formed of a great national building which is intended, for ages to come, to remain as a prominent example of the taste of this remarkable age. It is true, sir, that I am not a practical man, and yet still can form some idea of the difficulty an architect may find in adapting the design of a large building to peculiar purposes. In the late competition, however, it appears that the architects have been left a wide scope for the display of their imagination: large sums have been offered as prizes, the competition was very properly left open to the world, and yet we find that the best of the selected buildings strongly reminds one of others already in existence. In my own mind, I cannot help comparing the drawings in connection with this competition which you have shown us with Inigo Jones's design for the building of Whitehall Palace, and have an impression in favour of the elegant and varied plan of that architect. It may be said that in the present instance we do not want a palace, but two Government offices, for war purposes and for the management of foreign business. In the designs, however, which you have shown to us, there is little in general appearance which indicates what they are; but as already hinted, the designs offered for the Public Offices, so far as the exterior appearance is concerned, might just as well do for palaces, and would certainly give the public a much better idea of the home of royalty than the Londoners can obtain by a glance at the dingy and awkward pile called St. James's, and the equally unpleasant-looking Buckingham Palace. As regards the latter structure, it may be worth while to notice that the part of this building open to the view, not only of the inhabitants of the metropolis, but also of the many thousand visitors from the provinces (who are sure, if they can, to take a peep at the Queen's house), and the great bulk of foreigners, is but the back of the palace, holding pretty much the same position as regards the whole as do the stableyards and other subordinate premises of important mansions, and which are generally, if possible, concealed by trees and other devices. Enormous sums of money have been and still are being spent on this building, which turns its back upon the public, and which in the eyes of strangers of taste makes us to be worse thought of than we really deserve to be. Now, when houses are being demolished around this palace, and an almost incredible sum of money expended in clearing away the small surrounding dwellings, an operation which only serves to render the baldness of the architecture more apparent, might it not be considered worth while to open some peeps which would enable the public to get a glimpse of the western front, and the beautiful trees which are so well placed in the grounds?

Up Constitution-hill the screen is a dismal-looking brick wall; and on the Pimlico side the tall houses completely hide the palace front and garden. I venture to suggest that it would be well to throw down a portion of the brick wall and some of the tall houses, and let us have a distant peep at Buckingham Palace from these points. Considering how willingly the large grants for other purposes have been made, there is no doubt that the extra sums required would be cheerfully given.

Few persons would advocate this evident improvement if they thought that it would in any way interfere with the privacy of her Majesty or family; but by the gardener's skill we might have a view of the house, and the private walks be, notwithstanding, sheltered from the view of the passing crowd.

PEDESTRIAN.

RECENT PATENTS.*

T. W. G. TREEBY.—*Forming Sewers or Tunnels, and Gulleys to Tunnels.* Dated Nov. 13, 1856.—This invention consists—1. In forming a railway in the sewer to get rid of the earth. The rails are formed on the invert, and where they come the part may be hollowed out so as to prevent extra weight of material. 2. In causing a current of air to be drawn through, so that the sewer or tunnel may be carried any distance without disturbing the ground above. 3. Of a gulley sluice-trap for carrying off the surplus drainage. 4. In forming pipes with longitudinal joints as well as the common traverse joints that are now used. The object of this is, that the pipes may be taken through the sewer or tunnel in separate parts and afterwards put together.—*Not proceeded with.*

JOHN BIRD, Chance's Fire-brick Works, near Dudley.—*Manufacture of articles suitable to be used as Window-heads and Sills, Lintels, and other similar Parts of Buildings.* Dated Jan. 19, 1857.—This invention consists in manufacturing articles suitable to be used as window-heads, sills, lintels, and other similar parts of buildings from fire or other clay, in a dry or nearly dry state, by forcing it into a suitably formed mould by a pressure sufficiently strong to cause the clay to retain the form given to it by the mould after it is removed therefrom. The articles thus moulded are burned in a kiln, in which are three or more walls or supports, across which the articles to be burnt rest, being kept apart by separating bricks. At the front of the kiln is a screw, which, as the articles shrink during the burning, is used to force forward a block long enough to rest on all the supports, so as to keep the articles constantly in contact with the separating bricks, and never leave them room enough to twist or get out of shape.

T. C. SALT.—*A new or improved Method of*

* Selected from the lists published in the *Mechanics' Magazine* and *Engineer* journal.

Coating with Glass, or Enamelling Surfaces of Cast-iron. Dated Oct. 29, 1856.—The enamelling of cast-iron, or coating it with glass, is effected by the use of pounded glass enamel, applied by gum-water, and afterwards fused.

R. A. BROOMAN.—*Improvements in Machinery for Cutting and Dressing Stone, Marble, and similar Materials.* (A communication.) Dated Nov. 8, 1856.—The object here is to imitate hand-cutting. The distinctive features lie in the manner of working the cutting chisels. The stone is carried in a horizontal direction upon a moveable platform, while the chisels are made to act upon its upper surface in an inclined direction, and opposite to that of the feed. These chisels are supported in guides, formed in the lower cross rail of the frame. Each guide stock is connected to a toggle lever, the upper end of which is fastened to the upper cross rail of the frame, and it is by acting upon the centre joint of the toggles, whereby they are made to vibrate, that motion is given to the chisels. The motion is imparted by cams.

W. BRINDLEY.—*Improvements in the Preparation of Paperhangings and other Ornamental Papers.* Dated Nov. 5, 1856.—These consist in rendering wall papers or paperhanging impervious to moisture by a peculiar process of oiling and drying, which has also the property of communicating to the water or body colours, with which the same are stained, much of the character of oil-painting. And in glazing paper prepared by the said process, by passing the paper and compressing it between revolving smooth surfaced metal rollers, as practised in calendar machines.—*Not proceeded with.*

J. KINNIBURGH,—*Improvements in Moulding or Shaping Metals.* Dated Nov. 13, 1856.—This relates principally to the moulding of hollow or tubular articles of cylindrical contour, and is also applicable in the manufacture of articles resembling pipes in general structure. Core bars, capable of contracting in diametrical dimensions, are used. These core bars are each composed of three longitudinal pieces of curved metal, or segmental metal plates, combined together so as to form a bar of the desired diameter, with their longitudinal junction edges in contact with each other. On a spindle are keyed small eccentrics. Connecting rods pass from these, and are jointed to a long, narrow, externally-adjusting wedge-shaped piece, which virtually forms a fourth segment of the core bar.

JOHN FORTESCUE, Charles-street, London.—*Improvements in the Construction of the Furnaces of Bakers' Ovens for the purpose of Consuming Smoke, which improvements are also applicable to the Consumption of Smoke in other Furnaces.* Dated January 26th, 1857.—The furnace is provided with outer and inner doors, and is furnished at the top, at the end next the oven, with a block or inverted bridge extending downwards across the furnace. Over the inner door is an opening extending across the furnace, and the outer door is provided with a projecting block, which, when the outer door is closed, fits into the same opening, and renders the same air-tight or nearly so. When fresh fuel is supplied to the furnace the outer door is left open, and a current of air admitted, which, in passing over the top of the furnace, becomes heated, and is thrown downwards by the block or inverted bridge at the end of the furnace, and, meeting with the upward current of air through the furnace bars, effectually consumes all the smoke and gases evolved from the fuel. The admission of the proper quantity of air necessary to consume all the smoke is regulated by opening or closing the outer door of the furnace, which should not be left open wider than is necessary to admit the minimum amount of air required.

RECENT AMERICAN PATENTS.*

For Improved Machinery for Excavating Rock. JESSE C. OSGOOD, Troy, N.Y.—Claim: 1st, Excavating rock under water by means of the wedge-shaped chisel, whose length is greater than the depth of water. 2nd. The spring-head, or its equivalent, in combination with the chisel. 3rd. The arrangement of the spring within the loop or strap of the turn-buckle, in combination with the sliding nut.

For an Improvement in Rotary Brick Machines. GEORGE CRANGLE, Philadelphia, Pennsylvania.—Claim: A cylinder without movable bottoms to the moulds, in combination with a bed-piece fixed to the frame of the machine, so as to serve the purpose of said bottoms, the said cylinder and bed-piece being constructed, arranged, combined, and operated together.

For an Improved Saw-mill for Re-sawing Boards and other Lumber. PEARSON CROSBY, Fredonia, New York; patented Nov. 3, 1841; reissued March 10, 1849; extended October 30, 1855; re-re-issued April 28, 1857.—Claim: The mode of operation of gauging, guiding, and presenting boards to the action of a saw, which mode of operation results from combining with a slitting saw the mechanism for gauging and guiding one face of the boards, and the mechanism for making a self-adjusting pressure on the opposite face of the boards, so that the boards will be clamped between the two said mechanisms on opposite faces, and immediately in front of the cutting edge of the saw, so as to prevent the gauged face of the boards, however warped or bent they may be, in a plane parallel with the plane of the saw. Also, in combination with a slitting saw, and the arrangement of the gauge and pressure rollers connecting the said gauge and pressure rollers with the mechanism from which they derive motion by means of universal joints. Also, the method of hanging and straining the saw, by the combination of the three stirrups at the ends of the saw.

For an Improvement in Combined Square, Mitre Square, and Bevel. ALEXANDER MCKENZIE, Boston, Massachusetts. Claim: The arrangement of the try-square, the mitre, and the bevel blade, the latter being hung so as to project upon the opposite side of the stock from the blade, and so as to form when set at an angle of 45 degrees a continuation of the mitre head.

For an Improvement in Levels or Inclinometers. THOMAS A. CHANDLER, Rockfort, Illinois.—Claim: The combination of an entire graduated circle, provided with a pendulum and index, with the two parallel sides of the level stock, whereby I am enabled to apply either side of said stock to the surface whose direction is to be ascertained, and at the same time have the index facing the operator, in whatever position he may be placed. Also, the level composed of the before enumerated parts in combination, whereby, among other things, either edge of the instrument may be used uppermost with its face or dial towards the operator, and when any two of the pointers are screened from sight by an intervening body, the third will indicate the inclination of the surface to which the instrument is applied, and the angles at the head and foot of a rafter will be indicated at the same time.

For an Improved Side-walk Pavement. JOHN B. CORNELL, City of New York.—Claim: Casting in one piece a section of a street gutter and curb of suitable shape and proportions. Also, forming the side-walk pavement of a series of metallic plates, when said plates are combined with each other, and with the aforesaid metallic street gutter and curb.

For an Improvement in Iron Pavements. CHARLES METTAM, City of New York.—Claim: Casting each block, or plate, with a number of hooks standing out laterally from below the general level of the bottom thereof, and turning upwards in the form of vertical tenons, and with a corresponding number of mortises in the lower faces, so that when the plates are laid together, the vertical tenons of one block or plate enter mortises in adjacent ones, and the mortises receive tenons of adjacent ones, while the laterally projecting portions of the blocks or plates make them mutually supporting.

For an Improvement in Cast-iron Pavements. CHARLES J. SHEPARD, Brooklyn, New York.—Claim: Forming polygonal metallic paving blocks, with the inclines at the upper part of the straight sides, and with the projections to take the inclines of the adjoining blocks at unequal distances from the angle of said blocks.

For an Improvement in Apparatus for Boring Artesian Wells. JESSE N. BOLLES, Assignor to M. W. BOLLES, Philadelphia, Pennsylvania. Claim: The combination of cylindrical boring-rods with cutters and valves, so constructed as to discharge the detritus upon the surface of the ground at every stroke of the drill, or any other mode, substantially the same, which will produce the same effect.

For an Improved Process for Ornamenting Daguerreotype Cases, &c. JOHN F. MASCHER, Philadelphia, Pennsylvania.—Claim: The process of ornamenting daguerreotype cases, or other articles, in imitation of tortoise-shell, wood, marble, or other substances, by first covering the surfaces thereof with stained or coloured paper of suitable character, or staining or colouring the surfaces themselves in a suitable manner, and afterwards coating them with gelatine, and bi-chromate of potash.

* Selected from the lists published in the *Journal of the Franklin Institute*, of Pennsylvania.

Books Received.

Architectural Economics: comprising Tables and Designs for Details for Assistance in Estimating. By the Rev. G. Scratton; formerly of the Royal Institute of British Architects. London: Longman and Co.

THE object the author of this little book has in view is to shorten the process of making estimates of buildings by means of tables which he thinks almost all concerned in building might find serviceable, especially those upon whom devolves the laying out to advantage funds subscribed for charitable objects. Thirty-two of the fifty-three tables consist of "values computed in decimals of a pound, of the cost of the larger kinds of work which occur in buildings. Each decimal factor is a value of one square foot of the interior ground-plot of a given building, of which estimates are proposed to be calculated. In other words, take the area in feet of the plans minus the thickness of the walls, and multiply by the decimal factor given for the work whose expense is required to be estimated."

The calculations for this class of tables have been based upon certain definite sizes of area: it will therefore be necessary to bear in mind that these tables will only give approximate estimates in cases of great variation from the sizes here adopted, showing that the tables given are of very limited application. The various factors, such as for walls, roof, floors, &c. have to be taken from the tables and their sum multiplied by the number equal to the feet of area. The system is roundabout, and it may be a question, even in the case of the few plans given to which it could be applied, whether the result would be nearer the mean of four of five builders' tenders than the jumping estimate made by the common mode of cubing in the gross. Nevertheless, there are many who will find Mr. Scratton's book of results,—the proceeds of much labour,—a useful aid well worth its cost.

The Useful Metals and their Alloys, with their Applications to the Industrial Arts. London Houston and Wright, 65, Paternoster-row. 1857.

THIS volume contains a great deal of valuable information on the subject of the useful metals and their alloys, including metallurgic chemistry, mining ventilation, and jurisprudence, in relation to the conversion of iron, copper, tin, zinc, lead, and antimony ores, and their applications to the industrial arts. The subject of iron alone, however, occupies a great part of the volume, and it includes a pretty full account of the various uses and adaptations of that metal to architectural and engineering purposes, with numerous engraved illustrations. The work has been written by several authors, among whom are Messrs. W. Vose Pickett, the author of the "New System of Iron Architecture;" W. Fairbairn, the engineer and machinist; and W. Truran, C.E. The book resembles "Orr's Circle of the Sciences," if it be not based on it entirely, but in a new form.

Collectanea Antiqua: Etchings and Notices of Ancient Remains, illustrative of the Habits, Customs, and History of Past Ages. By CHARLES ROACH SMITH, Hon. M.R.S.L. Vol. IV. Part 4. Printed for subscribers only, and not published.

THIS part completes the fourth volume of this interesting and valuable archæological work. It treats of Roman remains found at Petham, in Kent, Discoveries of Frankish Sepulchral Remains by M. Auguste Moutié, a Roman Sword found near Mayence, and various other discoveries and researches. It also contains the preface, list of subscribers, and index, together with an appendix on Mr. Smith's "Museum of London Antiquities," sold to the British Museum, and other matter. The part, like those which have preceded it, is illustrated by engravings, and shows how efficiently Mr. Roach Smith is still working.

Miscellanea.

OUR FOOTWAYS.—I dare say that you, in common with myself and the legion of readers of your useful and instructive publication, have, in your peregrinations in the suburbs of London and other towns, bemoaned the absence of paved ways, anathematised the loose, sharp, rolling pebbles of the gravelled path, and begrudged the horse (so unconscious of the better provision made for his travelling, as compared with his biped master's) his smooth and pleasant road; but pray has it ever occurred to you or your readers that by a very simple process the pathways might be made as agreeable to the pedestrian as the roadways, and thereby danger to life and limb by the use of the roadway, or destruction to shoe leather, pain to tender feet, and most disagreeable walking be avoided? If not, I will endeavour to enlighten you upon the subject. The simple process referred to is the vigorous use of the birch-broom. Let *long-formed, well-trodden, gravelled footways, after ten days' or a fortnight's continuance of dry weather,* be well swept, and they will afterwards be found to be almost as pleasant to the feet, and much more agreeable to the eye, for paving footpaths in rural districts imparts a "cockneyfied" appearance to them. Our male poor might be employed in the operation. The expense of besoms would not be much, and the thing once well done, would not have to be repeated until after a due lapse of time from the application of the pickaxe and the laying down of new gravel.

F. C. M. SPEARMAN.

THE OPENING OF THE FILEY WATERWORKS COMPANY.—The opening of the Filey Waterworks took place on Friday, August 7th. It was intended that the directors and shareholders should have a pic-nic beside the reservoir; but the weather being so unpropitious, the assembly-room of the Royal Hotel was engaged for the occasion, where the party had their collation. Mr. Moody was called to the chair. The works had been planned and completed on a somewhat large scale, far beyond present requirements. The prospective wants of the rising and prosperous town of Filey had been considered and provided for. It was calculated they had sufficient water for 10,000 inhabitants. The demand for water, too, was much greater than was anticipated; and he thought there was every probability that the works would pay a good remunerative interest on the outlay. The works had been executed with economy, and yet in the best and most solid style. He thought there was very great credit due to the engineer, Mr. Fairbank, for his industry and skill. Under his direction the works had been executed in a most satisfactory way.

THE JENNER STATUE.—Steps are at length being taken to provide a suitable site for the statue of the discoverer of vaccination, completed by Mr. Marshall, and only waiting to be placed on its pedestal. Trafalgar-square is mentioned as its probable destination.

GAS.—At the eleventh half-yearly meeting of the shareholders of the Wolverhampton Gas Company, held last week, a dividend at the rate of 10 per cent. per annum, was declared, and a balance of 91*l.* carried to the reserve fund, which will then amount to 570*l.* The reduced rate of charges came into operation on the 1st January, and the result had been satisfactory. The policy of reducing the price of gas was specially approved of.——The half-yearly meeting of the York Gas Company was held last week, when a dividend of 7 per cent. was resolved on, and also that the charge for gas should be reduced from 5s. to 4s. 6d. per 1,000 feet. There was a warm discussion, it being contended that the company was in a prosperous condition, and able to pay 8 per cent.

PROPOSED GREAT CENTRAL WEST-END TERMINUS—The grand desideratum of a common centre for railway traffic in the metropolis appears to be assuming a definite shape at last. A scheme has already been matured for the construction of an immense central station on and around the site of the basin of the Grosvenor canal, at Victoria-street, Westminster (less than 1,000 yards from Charing-cross), with a central line of railway to run along the short route of that canal to the Thames, near Battersea-park Bridge, crossing the river by an iron bridge of its own to the Battersea side, east of the new park, and running thence through Brixton, Clapham, Dulwich, Camberwell, and the suburban districts on the Surrey side of the water, and communicating with *all* the lines of railway going south,—that is, with the lines to Brighton, Dover, the Crystal Palace, the main line of the South-Western, the Croydon, Epsom, Mid-Kent, and North Kent. It is astonishing that the *Times*, in announcing the advent of this grand and simple scheme, does not put the finishing stroke to so comprehensive and desirable a work, by pointing attention to the fact, that *already* the whole of the *northern* lines are connected almost with the very site of the central station of which it speaks, by means of the West London line, and an obvious and easy continuation of that line along the bed of the Kensington canal, and through some of the streets of Chelsea bordering the river, onwards to the Grosvenor canal itself. From the Great Western and the North-Western (which in turn are already connected with the Northern and North-Eastern lines by the North London), the West London already extends downwards to the basin of the Kensington canal, and thence one-half of the short remainder may be said to be already formed by the bed of that canal. The entire circuit of the Metropolitan lines, north, south, west, and east, would thus be cheaply and easily connected in the one grand terminus at Victoria-street.

THE BROTHERTON MEMORIAL.—For this memorial, which it is proposed shall be erected in the Salford Borough Cemetery, there has been a competition of models and designs; and we learn that at a special meeting of the committee, held on Friday, the 21st ult. the drawing No. 1, motto "Hyperion" (author T. Holmes, architect, Manchester*), was selected, provided it can be erected and completed in a satisfactory manner for the sum specified in the conditions. The prize of twenty guineas was awarded to the model No. 65, motto "Beta" (author M. Noble, sculptor, London). Special commendation was expressed in favour of the following, viz.:—Model No. 17, motto "His were deeds, not words;" drawing No. 41, motto "For men to seek their own glory is not glory;" drawing No. 51, motto "Nemo;" and model No. 60, motto "C."—*Manchester Guardian.*

* We are asked to say that this should stand as, by Messrs. Holmes and Walker.—ED.

HOW ARE WORKMEN'S HOUSES TO BE BUILT IN EDINBURGH.—Under this title, the Rev. Dr. Begg writes a letter to the Lord Provost, in which he says: "To build workmen's houses with advantage, they must, of course, be built in quantities. Land, plans, contracts, all can be got cheaper if got wholesale; and if well aired, dry, comfortable, well situated workmen's houses could thus be erected and sold to each workman at wholesale price, an immense object would be gained. The property investment companies have been extremely useful, especially to the class above the working men; but, inasmuch as they have not, like the English and Irish societies, done anything in the way of buying land or building additional houses, they have, by increasing the number of purchasers, only raised the value of all the second-rate property at present in existence. They have not as yet gone by any means to the root of the mischief, nor can they ever do so upon the present plan. They have been most valuable in teaching and encouraging frugality and forethought in many of our citizens, and in acting as a kind of bankers for managing the money of their members; but their full utility and value will only be discovered, as well as that of the savings' banks, when a scheme is set on foot for surrounding the whole city with new clusters of comfortable and suitable houses, which the people may have it in their power to buy by means of the existing machinery for accumulating money. Now, what I propose is, to raise a capital for this express purpose. Two friends of mine have offered to advance 100*l.* each with this view: I shall advance another; and if forty or fifty men in Edinburgh will do the same,—in other words, if 4,000*l.* or 5,000*l.* can be raised for this express purpose, I think I see how the entire ground-floor of our society might in due time be elevated above the present level of degradation. Let this money be advanced upon the principle of limited liability, and let the issue be tested, and each subscriber be allowed to retire if there is any loss of funds at the end of the first and of every succeeding operation: let the funds be handed over to a committee of first-class men of skill and experience—let them begin by erecting a number of houses upon the most approved plan, say from forty to fifty, in the most dense neighbourhoods of working men—let these houses be sold to the workmen in retail at cost price, after calculating all expenses—let the men, by means of savings' banks and investment companies, purchase them—let the capital thus extricated be again immediately removed to another locality, and the same operation repeated,—and let this be done again and again until the whole necessities of the working classes of Edinburgh are supplied; or until they have so learned the art of combination for the accomplishment of such an object as to be independent of help."

IMPORTANT MOVEMENT FOR THE PROMOTION OF SOCIAL SCIENCE.—Lord Brougham has consented to preside, and to deliver the inaugural address, at the formation of an association which is about to be established for the purpose of bringing together the supporters of the various efforts which are now being made for social improvement (sanitary reform, &c.) and to elucidate by discussion the connection between each, and the mutual assistance they may render to each other. The new movement will partake to some extent of the character of the educational conference recently held in London, over which the Prince Consort presided, various branches of social science being referred to "sections" or "departments" conducted by gentlemen who have paid attention to the subjects. The inaugural meeting will be held in the Town-hall, Birmingham, on Monday, October 12, when Lord Brougham will deliver an introductory address. On the evening of Tuesday a *soirée* will be held in the Town-hall. On Wednesday evening, the 14th, a public entertainment will be given to Lord Brougham and other members of the association by the mayor of Birmingham. On Thursday evening, the 15th, a public meeting will take place in the Town-hall, on the subject of the Reformatory movement. On Friday morning, the 16th, the concluding meeting will be held, to receive a report from the general committee, and on other business.

NEWCASTLE-UPON-TYNE SCHOOL OF ART.—The annual distribution of prizes gained by this school took place in the Museum at Westgate-street, on the 24th ult., the Mayor of Gateshead in the chair. In course of the proceedings it was stated that the committee had been in a manner forced from their usual quiet mode of dispensing the prizes, into some public display, by the extraordinary success that had attended the exertions of the pupils of the school in the present year, during which the new regulations had come into force. In the northern district of England there were six Schools of Design. It had turned out, as the result of the examination this year, that the number of prizes given to the pupils of the Newcastle School of Design was larger than the whole number gained by the pupils of the other five schools. The report was then read and the prizes distributed.

NEW BUILDINGS ON THE CASTLE ROCK AT EDINBURGH.—There are now in course of erection, or at least about to be commenced, some new edifices on the northern section of the rock. The site of the old garrison chapel, taken down some years ago, is the scene of operations. The face of the rock beneath the Mons Meg Battery has been scarped, and it is intended, it seems, to erect an extensive armoury on the original site of the church, to form three sides of a square, and to include Queen Margaret's Chapel in its integrity. Other alterations, including the erection of a chapel in a more obscure part of the rock, are contemplated by the authorities. "Here," remarks the *Post*, "was an excellent opportunity to repair the errors of the past, and redeem the architectural aspect of the Castle buildings. But what is the course pursued by the Ordnance? They utterly ignore the principles or practice of architecture, and commit the whole plans and designs to Colonel Moodie, of the Royal Engineers,—not an architect at all;" and the same course, it adds, is to be pursued in this instance which produced the contemptible fabrics on the western side. The botching of so magnificent and picturesque a site as the Castle Rock of Edinburgh by mean buildings is much to be regretted.

THE SEWERAGE OF BILSTON.—This work having been commenced by Messrs. Hassall and O'Brian, of London, we give the various estimates sent in for the work:—Mr. J. C. M'Kenzie, Wellington—Contract No. 1, 3,483*l.*; No. 2, 4,438*l.*; No. 3, 4,307*l.*; No. 4, 1,224*l.*: total, 13,452*l.* Mr. John Elliott, Wolverhampton—Contract No. 1, 2,796*l.*; No. 2, 4,318*l.*; No. 3, 3,763*l.*; No. 4, 1,192: total, 12,069*l.* Messrs. J. and S. Harpur, Derby—Contract No. 1, 2,900*l.*; No. 2, 4,400*l.*; No. 3, 3,500*l.*; No. 4, 1,260*l.*: total, 12,060*l.* Mr. Handerson, Wellingborough (which came too late)—Contract No. 1, 3,033*l.*; No. 4, 1,274*l.*: total, Nos. 1 and 4), 4,307*l.* Messrs. Hassall and O'Brian, London (which was accepted)—Contract No. 1, 1,750*l.*; No. 2, 1,525*l.*; No. 3, 2,240*l.*; No. 4, 836*l.*: total, 6,351*l.* It will be seen that the accepted tender was less than one-half of one of the others, and only slightly exceeded half the amount of any other. The commissioners agreed to maintain the sewers in repair themselves, instead of requiring the contractors to maintain them, and for this the following deductions were offered:—Mr. M'Kenzie, 134*l.*; Mr. Elliott, 300*l.*; Messrs. Harper, 1,404*l.*; Messrs. Hassall and O'Brian, 300*l.*: leaving the actual contract accepted at 6,051*l.*

THE THRONE-ROOM AT THE LUXEMBOURG.—An engraving of the new throne-room, recently inaugurated, will be found in our last volume (XIV. p. 434). As to the decorations of the apartment, we find in the newspapers that "The painting of the two hemicycles has been executed by M. Lehmann, and the cupola of the sections of the central division are the work of MM. Balze, Brothers. M. Brune has painted the two octagons and the eight medallions. The subject of the four paintings of the western gallery are selected from the reign of Napoleon I. and those of the eastern one from that of Napoleon III. M. Lehmann takes up the history of the monarchy and of French civilisation from the defeat of Attila by the Roman general Actius, and brings it down to the time of Louis XIV. M. Balze in the cupola represents the apotheosis of Napoleon I. Six medallions, placed above the three doors and the three windows of the central division, complete the ornamentation. In the octagon of the western gallery M. Brune has represented warlike France, and in that of the eastern one pacific France—that is, France of the arts, agriculture, and industry. The western hemicycle embraces three centuries and a half. It shows France reviving to faith and independence under the reign of the Merovingians and the Carlovingians. The two extremities of the hemicycle represent war. At one Merovens repulses the fierce Attila, and behind Merovens falls Actius, his ally. At the other Charles Martel is represented as striking down adversaries with his battleaxe, and driving back the Saracens. The painting on the second hemicycle goes over five centuries and a half, and in the centre stands prominently forward the figure of Joan of Arc. One of the eight pictures represents Napoleon III. distributing the eagles."

DESIGNS FOR THE SHEFFIELD CRIMEAN MONUMENT.—We understand that the Sheffield Crimean Monument Committee have received upwards of seventy designs, models, and drawings, which we are informed are of a superior character, and are now at the Cutlers' Hall awaiting the adjudication, after which they will be exhibited as early as possible. The judges selected by the committee are Mr. G. G. Scott, A.R.A., of London, and Mr. Edmund Denison, Q.C.

BIRMINGHAM ARCHITECTURAL SOCIETY.—At a meeting of the Birmingham Architectural Society, held on Monday evening at the Midland Institute, Mr. S. Hemming and Mr. J. R. Botham were elected to serve on the Council of Queen's College, in accordance with the charter of that institution.

BLACKBURN INFIRMARY.—I begin to think that the committee for erecting this building is in want of a secretary. I have sent two letters in application for the particulars of the competition as advertised in your pages, and have received no reply. Blackburn has ever had the reputation of supporting "native talent," and this would go far to bear out that character. A new secretary may, however, be of some advantage, for I have had on a previous occasion the pleasure of writing for full six months to the present functionary without receiving an answer. I trust that none of your readers have been used in a similar manner.—THOMAS D. BARRY.

A MINE PARACHUTE.—I desire to call the attention of those of your readers connected with engineering to an account of a mine parachute, which offers great if not absolute safety to the miner. From the account given below I should hope that it would not be difficult for some practical mind to devise a machine from the scanty particulars furnished. The extract from a morning paper runs thus:—"As eight miners were two days ago being drawn up with ten hectolitres of coal from the pit of St. Louis (Aude), the rope attached to the kibble broke when at a considerable distance from the bottom. The death of these men would have been certain, but for the adoption in the mine of the parachute Fontaine, which is so contrived that when the rope breaks the hooks of the apparatus stick into the sides of the shaft, and, preventing the fall of the kibble, keep it suspended until a fresh rope can be attached. The number of lives saved by the adoption of this apparatus in France already amounts to 82." I hope that a similar mechanical contrivance may be introduced to save our poor miners.—PIONEER.

EAST GRIMSTEAD CHURCH.—Permit me to explain the mistake of which "A Sussex Yokle" complains in your last number under the heading of "Sussex Churches." In the notice to which he refers, East *Grimstead* should have been printed East *Grimstead*; and this, as your note correctly informs him, is in Wiltshire. I may add that your former correspondent was not correct in stating that the chapel of ease had been rebuilt by the Rev. F. Glossop, the rector of West Dean, that gentleman having in fact borne a share only of the expenses, which were defrayed by a subscription amongst the members of his family.—F. H. POWNALL, the Architect.

RAGGED SCHOOL AT CHATHAM.—The Under-Secretary to the War Department having announced that Lord Panmure would provide a site 50 feet by 100 feet on Chatham Lines for a Ragged School, Colonel Savage, R.E. has staked it out, and handed it over to the committee, who have already nearly 300*l.* in hand, with many conditional promises. Mr. Charles Foord has undertaken to erect the building on liberal terms.

MANUFACTURE OF IRON.—Mr. C. Binks has obtained two more patents in connection with his process. He states that his invention consists in the employment of alkaline matter, in addition to, or in place of, lime, silica, or other flux. He prefers those ores which are freest from alumina and silica, such as good hematite, magnetic, specular, or spathose iron ore, blackband ironstone, &c. The alkaline matter he prefers is soda, by preference the carbonate, but potash or its carbonate may also be employed, or there may be used any other convenient materials that, under the conditions of the operations of a blast furnace, will yield an alkali, an alkaline carbonate, or a carburet. The quantity of soda used varies from 2 to 10 per cent. of the fuel, it being intended that there shall be sufficient of the alkaline base to retain all the impurities of the ore, without interfering with the combustion of the fuel.

SLATES.—In your journal of the 15th ult. you gave a paragraph on the names of slates. In order to form a correct statement, permit me to append the following. Before anything like a systematic working took place at the Bangor quarries, the slates from them and the neighbouring districts were sent from the quarries of various lengths and widths; but the greater number were from 6 inches to 18 inches long, and separated by the slater into sorts, the names of which you gave, and these continue in use in this neighbourhood to the present day, and cannot well be dispensed with. The later sorts of slates are different in every respect, being of an even surface, nearly square in shape, varying in name according to the size, but are always of one certain dimension. I may add, that about fifty years ago a considerable number from Llangollen were used, but as they have been found to last only thirty or forty years, they are not so much used as formerly.—WM. RUSCOE.

DECAY OF THE REMAINS AT IONA.—A correspondent of the *Scotsman* draws attention to the neglect and decay of the ruins on the isle of Iona, and suggests that something ought to be done to preserve them. The isle, we believe, is the property of the Duke of Argyle, whose attention, doubtless, only needs to be called to this subject to ensure the doing of all that is requisite.

HINT TO BUILDERS.—The freestone of the great quarries of Leckhampton, near Cheltenham, is nearly 110 feet in thickness, and some of the beds are remarkable for their treacherous disposition after a frost. Last winter the shivering and splitting of window sills constructed of this stone was universal in new buildings, and at Redmarley Church her Majesty lost her nose, and the Archbishop of Canterbury his big wig and chin, entirely through the corbels being cut from the "wet-stones" of this strata.—*Symonds's Stones of the Valley.*

THE "GREAT EASTERN."—The *Canadian News* states that this ship will be launched in the first spring tide of next month (October). The day is not, as yet, absolutely fixed, but this important event will probably take place on Monday, the 5th, the tides being highest on that day.

LEWISHAM: HATCLIFFE'S CHARITY.—The foundation stone of six new almshouses, was laid on Wednesday, the 26th ult. by the Hon. Mrs. Henry Legge. Five of the six will be built and endowed from the proceeds of the above charity, the sixth by subscriptions now in the course of collection. The design is by Messrs. Tinkler and Morphew, the former of whom, as we have elsewhere noted with regret, is since dead. The contract has been taken by Mr. William Miller.

REMOVAL OF SEWAGE.—A few days before I left Charleston, S.C. (United States), I saw at the Charleston Hotel a very ingenious contrivance for raising the contents of cesspools above the surface at a trifling expense, and without the usual unpleasantness on such occasions. An old boiler was set on tressels against a wall high enough for a cart to go underneath, and a pipe about 6 inches diameter went from the boiler into the cesspool, and a small lead pipe from the top of the boiler connected with the steam-engine of the establishment, and by letting the steam into the boiler for about ten minutes, then turning it off, it created a vacuum, and the boiler of 2,000 gallons would fill itself in about five minutes from the cesspool; then the cart, with a large barrel in it, would back underneath, and put a piece of hose-pipe, connected with the boiler, by a flange into the barrel, and carry off the load; the whole operation being done without any trouble or annoyance. Now, sir, could not this system be employed to advantage about large establishments in London, where there is steam on the premises? or would it not pay to have wells at the mouths of the large sewers, and raise the contents in this cheap and inodorous way for the purposes of manure, as there is no labour in raising, or filling the waggons.—JAMES M'CONKAY.

TENDERS.

For the Jews' Cemetery, Forest-gate, Essex. Mr. H. H. Collins, architect. Quantities supplied by Mr. Snell:—

	Mortuary House.			Lodges.			Roads, &c.			Total.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
Longmire and Burge	1539	0	0	427	0	0	1069	0	0	3035	0	0
Rivett	1520	0	0	430	0	0	878	0	0	2828	0	0
Wood	1320	0	0	442	0	0	1033	0	0	2795	0	0
Tolley	1365	16	10	497	17	6	836	0	0	2726	14	5
M'Lennan and Bird	1488	0	0	433	0	0	796	0	0	2717	0	0
Walbutton	1458	0	0	456	0	0	777	0	0	2691	0	0
Pickard	1371	0	0	430	0	0	768	0	0	2569	0	0
Dales	1254	9	9	339	6	4	752	7	0	2346	3	1
Morter (accepted)	1248	0	0	378	0	0	637	0	0	2263	0	0
Single	1078	0	0	342	0	0	574	0	0	1996	0	0

For alterations and additions to the "Salle Robin," Tichborne-street, Haymarket. Same architect:—

Messrs. Brunning	£1,425	0	0
Pickard and Co. (accepted)	1,162	0	0

For building house and stables at Blackheath, for Mr. James Laing. Messrs. W. G. and E. Habershon, architects. Quantities supplied:—

Peteman	£3,183	0	0
Gorham	3,139	0	0
Rowland	2,930	0	0
Evans	2,897	0	0
Tarrant	2,858	0	0
Purkiss	2,792	0	0
Todd	2,742	0	0

For additions to mews at Islington. Mr. James Tolley, architect. Quantities supplied:—

Hurst	£1,117	0	0
Glenn	1,088	0	0
Pickard	1,087	0	0
Dennis	1,000	0	0
Williams (accepted)	987	0	0

For new church, Blackheath, Mr. Benjamin Ferrey, architect:—

George Smith	£4,240	0	0
Lee and Lavers	4,200	0	0
G. P. White	4,020	0	0
Lucas, Brothers	3,856	0	0
Dove, Brothers	3,745	0	0
J. and C. W. Todd	3,680	0	0
Geo. Myers	3,508	0	0
H. and R. Holland	3,497	0	0

For the erection of Croxton Hall, Lancashire, for J. R. de Trafford, Esq. Messrs. Pugin and Murray, architects. Quantities supplied:—

Holme and Nichol, Liverpool	£7,600	0	0
Myers	6,000	0	0
Mullen, Liverpool	5,523	0	0
Yates, ditto	5,500	0	0

TO CORRESPONDENTS.

Mounting Tracing Paper.—"Silvio" asks "to be informed of the best method of mounting tracing paper on linen or paper,—more particularly the latter."

H. W. (we are not aware if the reward be still recoverable. Our correspondent if wise, will not entertain an idea which has led many to poverty).—M. A. A.—Friend to the *Builder* (it would be waste of time to discuss incomplete report).—J. S. B.—W. V. (must look to the date at the head of the papers; not at the title-page of his book).—T. M.—J. T.—J. F. F.—Centurion.—G. B. N.—Sine fuco et fallaciis.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and not to the Publisher.

"*Books and Addresses.*"—We are forced to decline pointing out books or finding addresses.

ADVERTISEMENTS.

METROPOLITAN BOARD of WORKS. ELECTION of DISTRICT SURVEYOR under the METROPOLITAN BUILDING ACT, 1855.—The Metropolitan Board of Works hereby give notice, that they will, at their meeting on FRIDAY, the 2nd of OCTOBER next, at TWELVE o'clock at noon, at Guildhall, proceed to the ELECTION of a DISTRICT SURVEYOR for the District of St. George-in-the-East and St. Botolph without Aldgate.—Applications in writing, with certificates of competency, addressed to the Board, will be received at their Office, No. 1, Greek-street, Soho, until THURSDAY, the 1st OCTOBER next, at FOUR o'clock, p.m. and candidates are requested to be in attendance at the meeting of the Board on the day of election.

F. H. WOOLRYCH, Clerk of the Board.

1, Greek-street, Soho, 29th August, 1857.

MANCHESTER CITY SURVEYOR.—The Council of the City of Manchester are prepared to RECEIVE APPLICATIONS for the Office of CITY SURVEYOR, now vacant. The gentleman appointed will be required to undertake the direction and management of the surveying and architectural business of the corporation, and to possess knowledge and experience as a civil engineer, and not to be, directly or indirectly, engaged in any other business, and to devote the whole of his time to the service of the corporation.—Sealed applications, with testimonials, stating the age of the applicant, and the amount of salary required, and endorsed, "Application for the office of City Surveyor," addressed to the Town-clerk, must be delivered at the Town Hall, Manchester, on or before MONDAY, the 14th day of SEPTEMBER next.—By order,

JOSEPH HERON, Town-clerk.

Town Hall, King-street, August 28, 1857.

CLERK of WORKS, capable of preparing Plans, Drawings, Estimates, and Superintending the Erection of Workshops, &c. WANTED IMMEDIATELY. Liberal wages will be given to one thoroughly acquainted with the business.—Address, by letter, with full particulars as to qualifications, terms, &c. to G. Essex Wharf, Strand, London, W.C.

IN a SURVEYOR'S OFFICE.—WANTED, a YOUTH, who can write a good plain hand, trace drawings, and square dimensions.—Address, in own handwriting, to D. J. BROWN, 27, St. George-street, Westminster.

TO PLUMBERS.—Notice is hereby given, that there is a VACANCY in the Office of BEADLE to the Plumbers' Company.—Persons desirous to become Candidates are requested to send their written applications for the same, with testimonials, to Mr. TOWSE, at 24, Laurence Pountney-lane, Cannon-street, City, on or before the 15th day of SEPTEMBER next, and to attend the Court, at Plumbers'-Hall, Bush-lane, Cannon-street, City, on MONDAY, the 21st day of SEPTEMBER next, at TWO o'clock in the afternoon precisely.

TO CARVERS.

WANTED immediately, a CARVER of good qualification, to execute sundry miscellaneous works; a portion of which are situated in the county of Leicester; the other portion (figures) may be executed at his own residence.—Address, Mr. ORDISH, Architect, Leicester, stating where, and by whom, latterly employed.

TO ORDNANCE SURVEYORS OUT OF EMPLOYMENT.

WANTED, for a short time, a first-class ORDNANCE SURVEYOR for town work.—Apply by letter, stating terms and references, to H. S. Office of "The Builder."

WANTED, in a Builder's Office, a CLERK used to keep accounts and take out quantities occasionally.—Apply to X. B. Office of "The Builder."

WANTED, immediately, TWO or THREE good MASONS.—Apply at the CHURCH, Braintree, Essex.

TO BRICKLAYERS.

WANTED, a BRICKLAYER, to do the labour of some semi-detached houses, at per rod, and find scaffolding.—Apply to W. F. STEVENSON, 1, Melbourne-terrace, Pratt-street, Camden-town.

WANTED, in an Engineer's and Iron-founder's Office, a YOUTH, as JUNIOR CLERK. He must have a good knowledge of architectural drawing. He will have to make himself generally useful.—Address, to A. B. care of Mr. Woodhall, 63, Poland-street, W.

CARMAN AND ACTIVE LABOURER.

WANTED, a well-recommended Man, for taking great care of his horse, and to drive one horse and cart, make himself useful, read and write. Age about 40; married; no incumbrance. Also a strong active Labourer, with respectable habits, from the country, as Gate-keeper: one that can make packing-cases preferred: fill up his time in the works; must read and write well; married. Wages about 15s. to commence with.—Apply by letter to T. C. Office of "The Builder."

WANTED, by a Young Man, a SITUATION as BRICKLAYER, or Employment. Can do painting.—Address, W. B. 8, Upper Boston-place, Dorset-square.

TO BUILDERS, PLUMBERS, &c.

WANTED, by a well-experienced Young Man, EMPLOYMENT as PLUMBER; will fill up his time in any other branch, if required.—Address, H. S. 10, Robert-street, Bedford-row, W.C.